The Builder.

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Excavations on the Palatine: Rome.

O scene of Roman ruins equals the Palatine in blending the wildness of nature with the beauty of decay—the picturesqueness of landscape with the solemnity of monumental remains. Long avenues of trees extend their perspective between vaulted chambers more or less fallen: huge masses of crumbling masonry rise out of garden plantations: files of cypresses shoot up from high terrace-walks: the myrtle and the ilex hang over shattered walls that seem on the point of sinking to the ground: here and there may be seen the fleshy foliage of the cactus, or the broad tapering leaves of the aloe, spreading from some chink of ruin where soil has accumulated: even the vulgar appropriation to vegetable gardens, along considerable areas of this height, has not destroyed the solemn sadness or affecting beauty of the "Imperial Mount" in its present desolation. Deplorable, however, is it that the views of its ruins, from every point in the city, are marred by the frightful prominence of the villa near its highest level, for whose gingerbread architecture and salmon-coloured fronts an English proprietor is, unfortunately, responsible; and still greater matter of complaint is it, that, since its acquisition, about four years ago, by French nuns, this demesne, become that of a convent, has been no more accessible; though comprising sites that every traveller must desire to visit,—the principal centre, as assumed, of the palaces built for Augustus, part of whose walls are actually built up in this "Villa Mills."

If Rome's primitive annals may be still relied upon, the Palatine continued the residence of her kings from the time of Servius Tullius till their expulsion and the change of government: we may go back, indeed, to the more poetic and fabulous memories of Evander and the Arcadians, on this height, for about eight centuries before Romulus; or even assume that the "Roma quadrata," supposed to have occupied its western angle, was a Pelasgic city, the original phase, within its narrow limits, of what became the capital of Romulus after fortifying walls had extended its boundaries to include the entire Mount, a circumference of not more than 6,500 Roman feet. The straw-built cabin of the founder is said to have stood here, reverentially preserved, for centuries; and before the Imperial period rose here the temples of Jupiter Stator, of Cybeles, Juno Sospita, and Vesta, the *Curia Veteris* and the *Sacrarium Saliarium*, where were kept the sacred *ancilia* and the *lituus* of Romulus: here also were built residences of high aristocracy, of Crassus (where marble columns were first seen erected in Rome), of Cicero, Hortensius, Clodius, Milo (his slayer), Catiline, the fathers of Augustus, Tiberius, and Nero. The narrow, unpretending mansion of Caius Octavius was rebuilt, after his son had risen to the summit of power, in the year four of our era; and now, with far more splendour, fit sojourn for an emperor, with pillared halls, baths, a library, and an *atrium* surrounded by marble columns: yet, though of costly detail, not very imposing in dimensions, if we admit the report of Nibley (from minute investigation of its ruins), giving 250 feet for the width of the front, 225 for the lateral buildings on the acclivity, 280 for the higher extending along the summit of the mount at its north-western side. On the ground conceded to him Augustus presently raised the Temple of Apollo and Palatine Library, that superb fane, in the centre of a quadrangular portico with pillars of Nermidian (*giallo antico*) marble; having been dedicated in presence of a poet, who has fortunately left us a graphic description of its edifice and contents (Propertius, *l.* 11, El. 23). With all its adjacent buildings this temple was destroyed by fire A.D. 363; but the Sibylline books, kept in gilt coffers below Apollo's statue (a work of Scopas), were with difficulty saved, as Ammianus tells us. The library seems to have been also preserved, to exist much longer; but there is no probability that the Pagan fane was ever restored; seeing how soon followed (A.D. 394) the edict of Theodosius for closing all the temples of the fallen worship throughout his empire. Near the same site arose, soon after Augustus's death, the temples dedicated to himself, and afterwards to Livia; probably, indeed, to all the deified Cæsars in succession, as the same honours were decreed to their memories. Caligula raised here a temple to himself whilst yet living, and had his golden image in that sanctuary of self-worship daily attired according to the model of his morning's toilet! Till his time no great extent of buildings had commanded admiration on this height; and he it was who first prolonged the imperial residence to the north-eastern side (overlooking the Forum), where some of its most conspicuous ruins still remain; and one wing was then brought forward below this angle of the mount, so as to be connected with the *Curia Julia* (the senate-house restored by Augustus), in the project of rendering that venerable edifice a mere vestibule to the tyrant's palace! Hence, too, was carried the bridge from the Palatine to the Capitol above the Forum, in Caligula's frantic vanity designed to secure immediate intercourse with his kindred deity, Jupiter Feretrius, at the great fane on that summit. Some have inferred that the temple of Castor and Pollux was that destined to become a mere portico to the residence of Caligula; but Canina convincingly shows that the beautiful Corinthian columns below this side of the Palatine are, in fact, the remains of the Curia, rebuilt first by Sylla, afterwards by Julius Cæsar, but in the last instance completed by Augustus. These are the three columns to which no fewer than *twenty* names and origins have been assigned by the Roman archæologists! Beyond them, against the declivity of the mount, stands an imposing pile of the most solid brick masonry with projecting buttresses, now in part hidden behind unsightly granaries. This was considered, by Emil Braun (late president of the German Archæological Institute), the structure of Caligula, from which advanced his bridge over the Forum; by Canina the minor hall of the senate-house. Tiberius only enlarged the house of his father, extending it as far as the temple built by Augustus; and in this wing of the palace, at the north-west angle (above S. Anastasia), subsequently resided two emperors, whose characters stand in noble contrast to that infamous tyrant and his successor—Antoninus Pius and Marcus Aurelius. When Nero began to reign, the palace covered little more than one-half the entire area of its mount: he extended it over all the remainder, built above the structures of Caligula at the north-eastern angle, so as to render useless (as inferred by the contradictory plans of the two buildings) those additions by his predecessor; and after the great fire, whose origin is imputed to himself, had destroyed much of Nero's edifice, he caused its restoration with that yet unequalled splendour and extent implied in the popular title "Golden House," for this vast residence that absorbed three of the Seven Hills—the Esquiline and Cœlian, besides the Palatine,—the whole intervening valley (now site of the Colosseum), with the classic gardens of Mæcenas (now the Villa Negroni), altogether occupying a surface about 3½ miles in circumference. Vespasian had the wisdom to reduce the imperial home once more to its proper limits, on the Palatine height; and the Thermæ of Titus, on the Esquiline, have, by absorbing, preserved to this day the only portion of the Golden House saved from destruction, at least beyond the limits of the former mount; though a few formless buildings, in the best ancient brickwork, that rise at one extremity of Maxentius's Basilica (called that of Constantine, because dedicated to him) are also considered by some authorities an extant fragment of the Neronian structures. Nibley concludes that the entire material of the Temple of Peace and of the Colosseum, also for the restoring of the Temple of Claudius on the Cœlian, was provided from the remains of that stupendous palace struck down by Vespasian. The threshold of the Golden House, or that portion entirely apart from the Palatine, is said to be now marked by the church of St. Maria Nuova, behind whose monastic buildings, opposite the Colosseum, was found, within late years, the enormous brick basement of Nero's Colossus, removed thither, from the palace façade, by Vespasian, in its *new* character as the statue of Apollo, supposed to have stood there undisturbed till the sack of Rome by Genseric. By Titus was also added a vestibule, or atrium, on the side of the Palatine above the Via Sacra, between his own triumphal arch and the Colosseum, presenting here a front with columns, and niches for statues or fountains, whose details Nibley was able, some thirty-five years ago, to trace with apparent accuracy (see his "Roma Antica," 1838). To that last emperor's buildings Domitian added much of the decorative character, with profusion of costly marbles, described by Martial and Statius; also the magnificent pillared hall of Adonis, rising in the midst of a garden planted with oriental and exotic shrubs and flowers, like a scene of paradisaical enchantment. Under Commodus occurred the conflagration which destroyed Vespasian's Temple of Peace, the thrice-sacred fane of Vesta, and a great part of the imperial residence: the latter, however, was then repaired by Septimius Severus, who, celebrated for his zeal in restorations, not only rebuilt but much enlarged the Palatine edifices; raised a vast extent of vaulted halls in two stories along the south-western side, above the Circus Maximus; and at the south the splendid pile called Septizonium (probably from its seven stories), with three zones of porticoes and colonnades, granite, giallo antico, and the deep-dyed breccia known as Africano, or other precious marbles forming their shafts; it is supposed in the desire, on the part of this foreign emperor, that his countrymen (the Africans) should receive their first impression of imperial pomp in Rome from this superb adjunct, on the side nearest to the southern gate, by which they would enter the city. Above the Forum were added to the structures of Titus the Baths of Heliogabalus and the Temple to the Syrian sun-god, whose high-priest that boy-emperor considered himself; and where it was his passion to centre, for subordinating to his favourite worship, all the sacred objects and usages of Rome—the Palladium, the fire of Vesta, the image of the *Bona Dea*, &c.; but which temple seems to have totally disappeared after the murder of the Syrian

emperor, whose insane orgies took place either here upon the now ruin-clothed height between Titus's Arch and the Colosseum, or where now stand the Basilica and Monastery of S. Croce, founded by Helena, to enshrine the relics of the cross. The worthier cousin of Heliogabalus, Alexander Severus, only increased the splendours of the Palatine by paving its courts with inlaid porphyry and serpentine, in the beautiful style afterwards adopted for the earliest Christian basilicas, and still called after him, *Opus Alexandrinum*.

The first imperial master had declared the edifice raised for himself by the public money, on this mount, national property. Nero averred, on the day he took possession of his Golden House, that he at last felt himself lodged *like a man!* but the benevolent Nerva, returning to the idea of Augustus, had inscribed, over his palace portals, *Ædes Publicæ*. The story of restorations and embellishments to this imperial residence closes with the reign of the virtuous young Alexander; and from the fourth century of our era commences that of its decay, in mournful contrasts, but full of impressive lessons and striking oppositions between Pagan and Christian destinies.

The first dark cloud that came over the already deserted Palatine (deserted, at least, by its sovereign masters, from the departure of Constantine and the establishment of the Exarchate, at Ravenna), was at the sack of Rome by Alaric, A.D. 409, lasting three days; but it seems that on the taking of the city by Genseric, 455, the ferocious pillage that ensued, unintermitted, for fourteen days and nights, inflicted much greater injuries on this as well as the other palaces and sanctuaries of the Seven Hills. All moveables, all adornments and furniture, were then carried away from the imperial halls; and among other treasures (Procopius tells us) the sacred vessels from the Temple of Jerusalem; which, first displayed at Vespasian's triumph, had been deposited by that emperor in his Temple of Peace; thence removed to be saved, when that fane took fire.

In 465 the palace was still inhabited by Rome's prefects; one of whom, Severus, died here that year; poisoned, as we are told, by Cassiodorus. In the year 476 Odoacer made brief sojourn within these walls; and again, in 500, Theodoric made the Palatine a royal residence by a longer stay; during which he ordered many restorations, both here and in other Roman edifices, described as magnificent in the pompous language of the secretary, Cassiodorus. Throughout his history of the Gothic war, Procopius never mentions the Palatine (except to record the fact above mentioned), leading us to infer its abandonment in the sixth century. For the last time did an emperor take up his abode here in 629,—Heraclius, then visiting Rome after his conquests in Persia; and here was solemnized his coronation, by the senate, not (strange to say, when we contrast that ceremony with what imperial coronations afterwards became in Rome) by the hands of any pope, or with any recorded intervention of pontific authority.* In the eighth century, it is inferred, the Palatine was left completely deserted, subject to the natural processes of decay. The last mention of its buildings, as still a "palace," occurs under date 708, in Anastasius's "Life of Pope Constantine." In 995 part of the external porticoes, probably on the southern side, was given by Duke Stephen (son of the consul Hildebrand) to the Camaldolese monastery of S. Gregorio, that still faces the mount from this quarter, beyond the Arch of Constantine: thirty-eight chambers on different stories (called *cryptas* in the act of donation) included in this gift to the monks; and allusion made in its terms to the fact that the Septizonium of Severus was already possessed by those monks, converted into a fortress for their protection. About the same period arose, amid the once luxurious gardens of Adonis, a church and abbey called S. Maria in Palladio (afterwards corrupted into Pallara). In 1084 a nephew of Gregory VII., named Rusticus, sustained a regular siege in that Septizonium against the assailant forces of the Emperor Henry IV. Early in the twelfth century the Frangipani family erected one of their strongest castles at the foot of the Mount, near the Arch of Titus, reducing that beautiful ruin to a kind of donjon-keep; and this *Turris Cartularia*, as it is called in Mediæval annals, because at one time it was used for archives (hence also styled *Bibliotheca Publica*), was not finally swept away, to leave unimpeded view of the triumphal arch, till 1829. To the Frangipani the monks of St. Gregory ceded their Septizonium, for due compensation, in 1145. In 1198 the cardinals took refuge within its walls, amidst the turbulences ensuing on the death of Pope Celestine III.; and again, after the death of Honorius III. (1227), that college assembled here to hold the conclave, for electing to the vacant throne Gregory X., the new pope; hence proceeding to take possession of sacerdotal sovereignty by the cross and keys from the same walls where Cæsars had dominated over the ancient world. Not many years afterwards the Septizonium became the prison of the senator Brancaleone, overpowered by a popular rising against his authority; but being soon liberated and reinstated, that same senator ordered, in 1258, the demolition of all the principal fortified towers where the Roman barons had made their petty sway formidable; and about 140 being thus destroyed or truncated, it is inferred that many classic buildings, the Septizonium among the rest, suffered, together with those feudal strongholds piled above their misused architecture. That splendid structure finally and totally disappeared under Sixtus V., condemned by that pope to yield all its costly material for adorning the interior of the new St. Peter's. Its last notice by any ancient writer is found in the "Familiar Epistles" of Petrarch, who merely tells us that it was, when he visited Rome, known popularly by the title, "Seat of the Sun." The "Mirabilia Romæ," that strange mixture of romance and iguorance, compiled by a foreign visitor in the thirteenth century, undertaking to describe the city's antiquities with most curious interpretation as to their origin and purposes, calls the imperial ruins "*Palatium maius*," without supplying any description of what the Palatine then was; but Poggio ("De Variet. Fortunæ") tells us that it had become in the fifteenth century a mere pile of formless decay, wrecks out of which none could determine the appropriation of the several parts. We must break off for the preseut.

* In "Augustali solio Cæsariani Palatii a Senatoribus positus et diademate redimitus, Monocrator constitutus est."—Chronicle of Monte Cassino, in Muratori's "Rerum Ital. Script."

OPENING MEETING AT THE ARCHITECTURAL MUSEUM.

THE opening meeting of the session of 1862 was held on Tuesday evening, on which occasion the prizes awarded to art-workmen were distributed. The chair was occupied by Mr. Beresford Hope, President.

The Chairman said they were assembled that evening, as often theretofore, for the purpose of carrying out the main principle and intention of the Museum—distributing the annual prizes to those who had entered into competition for them. Although that was the main object of the institution, it was not the only one, as he hoped to prove in the course of his observations. But before he went into a detail of their administration during the past year, there was one topic that he was sure rose spontaneously to the mind of every one who loved or cared for the fine arts in this realm,—and rose with more immediate significance in that Museum: it was the feeling of deep regret at the sudden and irreparable loss which fell upon this land in last December. They all knew how devoted the late Prince Consort was to everything that could conduce to the happiness and the glory of that country which he made his own, and which made him its own. He was great, because he never assumed greatness: he was popular, because he never thought of popularity; and no one knew how much they cared for him until the time came when he was lost. As a patron of art, even more than in any other aspect, he came before the public with credit and renown. They now knew that it was not merely as a patron of art he was endeared to the people, and that the influence which could best be employed and most legitimately carried out by not being ostentatious, was ever exercised for the advancement of every other branch of the public welfare. But in the matter of art he came most conspicuously before the public; and as one who promoted all good art objects, so did he a few years ago most kindly and generously accept the office of patron of that Architectural Museum. In his demise, therefore, they were deprived of their official head—of their chief officer,—as well as being sharers in the great national grief. It was, then, impossible to enter on the business of the evening without first paying that tribute of regret which all Englishmen and all Englishwomen must pay at the tomb of the Prince Consort and at the throne of the Queen. Officially they had done so already: their address of condolence had been presented. But they knew that no single address of condolence could be expected to penetrate the august presence, or to have any personal effect. It was the swelling of that high spring-tide of grief, from every side and from every class, from every association incorporate or voluntary, from every denomination and from every grade of life: it was that great tide flowing up silently, solemnly, unbrokenly, that testified to the world at large that the loyalty of the land is, even in the darkest hour of her Christian sorrow, a holy consolation to our widowed Queen. Having discharged that duty, he would proceed to other matters of a less touching character. All who had taken an interest in the concerns of the museum knew that for the last two years they had been in a transitionary state, and were aware that the world for which it directly existed shaped itself into three classes: first, the accumulation of as perfect an architectural museum as possible, especially of Mediæval art, but not disregarding art in general; secondly, the delivery of a series of lectures on architectural objects in that hall; and thirdly, the teaching of art workmen by means of annual prizes. These three distinct and different, but at the same time harmonious, objects were what the museum existed for. With regard to the first—the collection of a museum of architecture—they were the first in the field. When others doubted and shrank, and did not understand how, they came forward, and began the work. They made a collection of course at the commencement—not very systematic, for they were beholden to the good offices of friends; and in their young days it was not judicious to look gift horses in the mouth. But as time went on they became more fastidious, and their friends got more careful in what they gave; until, ultimately, they would have refused, and no one would have thought of offering, any specimen that did not stand in a high order of merit. Well, the museum had limits, but the ambition of man has no limits; and, accordingly, a question of space came in; and then arose questions—nobody need be and nobody was ignorant of it—there was no need to be ashamed of it at either side—of disputed jurisdiction. Their possession, as custodians of a collection of which they were themselves the proprietors, inside that cabinetted institution, may now and then have raised difficulties. Matters came to that state when a negociation and arrangement became necessary. This negociation which is still on paper—this arrangement which is not yet consummated—was, in brief words, that so much of the collection as remained there should be handed over to the authorities of the South Kensington Museum; but that the ownership by the Architectural Museum should be noted and respected. In being so handed over, it was understood that they should form a part of a future national collection of architecture; and it was provided—perhaps not with the accurate definition which a lawyer would have imparted into the document, but still in terms quite sufficient to be perfectly stringent on gentlemen acting together, as was the case in this instance, on an honourable basis—that the opinion of this Museum should not be rejected: he did not say it was to be invited, but that it should not be rejected, and that it should have its weight with the authorities of the South Kensington Museum in the purchase of fresh specimens for that collection. In return for that—the illustration of lectures—this Museum is to have the use of the whole collection upstairs, whether of that portion noted in the catalogue as their own, or of that portion which is the property of the Government Department. In agreeing to these terms, of course something of personal feel-

ing was sacrificed. He would not have them to suppose—as little would he have the authorities to believe—that it would not have been more pleasant and agreeable to them to have had, as heretofore, the collection and management of the National Museum of Architecture. But there were certain reasons which it was not for them to criticise—certain etiquettes and regulations incident to the existence of a large and complicated department, which, as they were informed, made it impossible for them to be an *imperium in imperio*—a separate institution inside those walls; while, on the other hand, they had no physical means of going elsewhere and setting up their museum, even if that was desirable, which was a question he would not then go into. It was a negociation on the one side, and a compromise on the other, in the broad sense of the term. They entered into it cheerfully, and they trusted and hoped and believed that the manner in which they entered into it would cause the matter to be carried out in the manner they should desire. At the same time they did not pretend to say that they had not given up that independent position which they held while the tenants of a cock-loft in Cannon-row. But if there be a great museum of architecture hereafter in England; and if it became one of the famous institutions of the country; if it go on to form a school of architecture and artists, and art workmen; then all who watched the rise and progress of this museum would be obliged, if they spoke the truth, to say that the Architectural Museum, late of Cannon-row, held the same position to that great Government Museum that the collection of that great physician, Sir Hans Sloane, did to the British Museum. Very few of his collections are there now: the worms and the moths have had to do with them; but still his name remained as the person without whom there would probably have been no British Museum; and it was not arrogating too much to say that, were it not for some of the gentlemen whom he saw present, who first undertook to carry out the idea of a collection of architectural casts, there would very probably be no Architectural Museum in existence. So much for the negociations, which are still under consideration. Nothing has been done with them, finally; and they stand over for the present. The government is re-building these buildings, and everything is in a mess; but he hoped that all would come out well, and that there would be room found for their collection of Indian Sculpture which the new governor of Bombay, Sir Bartle Frere, had given them, and which was still in packing cases. The second branch of operations is lectures. He might, parenthetically, observe that, if the government undertook to provide an architectural collection, and if it followed their advice, as he trusted, and believed, and hoped it would, in the purchase of specimens, the Architectural Museum would have more money at their disposal to apply to the advancement of their other branches; as of course they would not pay 20*l.*, 30*l.*, 50*l.*, for a specimen, merely for the pride, honour, and glory of saying it belonged to them, when they could get the revenues of the British Empire to pay for it. Now, as to the lectures, it had been controverted whether they had any direct bearing upon their other object; whether they helped on the accumulation and collection of casts; whether the art workmen were the people who came to them; or whether they had not a select audience at the Lectures of persons in that class of life, who, being in circumstances to select the amusement of the evening as they liked, selected the amusement of going there. That might be the case. He did not deny it. He would even admit that it was the case; but what then? When there was a society like this, which used various measures of utility in the carrying out of its objects, was it necessary that there should be absolute identity between them all, or that each should hang on the other? Might not a railway company serve one place in the north and another in the south, if they possessed capital to enable them to do so? The collection of specimens was one thing: lecturing was another and distinct thing; and, while they appealed to their special friends the art-workmen to come and listen, and profit by the lectures, they were not prepared exclusively for that class. It is a fact that architecture is a science, or a collection of sciences, which arrests many very high intellects, and has many most interesting fields of observation. It is a study that is pursued usefully and profitably up to a certain point by hundreds and thousands of intelligent people, who make no pretence to deep science, but who listen to the lectures with pleasure and advantage. There was no course of popular architectural lectures in London. The lectures delivered in that museum could only treat architecture as one branch. Those delivered at the Royal Academy were specially addressed to students. It was found that out of the hundreds and thousands of people around them, an audience could always be found who would be pleased and profited by the lecture in that museum. Since that time that most excellent institution, the Architectural Gallery, in Conduit-street, had started its course of lectures. What is the result? Our lectures fill and so do theirs. There is ample room for both; and there does not exist the least rivalry or enmity between them. The following is the list of lectures by men of eminence for this session:—

Tuesday, March 25.—"On the Difference between Minster and Parish Churches." By E. A. Freeman, esq., M.A.

Tuesday, April 8.—"On Encaustic Tiles and Tile Pavements." By the Rev. Lord Alwyne Compton.

Tuesday, April 22.—"On the History of the Temple Area at Jerusalem, with its Buildings and Sub-structures." By Dr. Ermete Pierotti, architect to the Pasha of Jerusalem.

Tuesday, May 6.—"On the various Systems of Coloured Decoration of the Middle Ages." By W. Burges, esq.

Tuesday, May 20.—"On Ecclesiastical Architecture in Georgia and Armenia." By the Rev. George Williams, B.D.

Tuesday, June 3.—"On the Formation of a National Museum of Architecture as viewed especially in its connexion with the Mediæval Styles." By G. G. Scott, esq., R.A., F.S.A.

Tuesday, June 17.—"On Labourers' Cottages and their bearing upon Architecture." By the Rev. Thomas James, M.A.

His object in reading the list was to show those who might be present and not so familiar with the working of the museum, how wide was its scope of action. Looking at the names he had read, it must be apparent that, unless there was some extraordinary and unprecedented and not-to-be-contemplated break-down, the very fact of such a bill of fare, and the names of the cooks that prepared its different dishes, showed that the museum did not exist in vain. He now came to the third branch,—one in which the Architectural Museum had come forward in its own peculiar line of business,—that is, the study of the minute details of architecture. Standing up as he did for magnitude,—as an advocate for large cathedrals instead of small churches, and for bold sky-lines in London,—while he had taken the side of bigness (and it was very appropriately used in that particular neighbourhood) as against detail—pure unadulterated bigness, and nothing but bigness;—there was something else which need not be left unattended to; and that something was grace, proportion, and beauty of detail. The same Providence that made the Alps made the humming-bird—each a type of beauty, but beauty of a different sort. It would be great folly to depreciate either. The committee of the Architectural Museum determined, therefore, to follow out that most necessary branch of art-study—the study of detail—the study of the beauty of form—to be carried out in even the smallest matter in which man's handiwork is apparent. Here he should point out a very important fact. They did not exist to make architects or artists. They did not pretend, or expect, or want to do so. Artists were made at the Royal Academy and elsewhere. What the Architectural Museum wanted was, to make art-workmen. He would go further, and say, to make workmen work in an artistic and beauty-loving spirit. This year, particularly, they were bound to unfurl that standard, and to proclaim, loud, long, and deep, that that was their object, when there was in their immediate neighbourhood the building to which he had referred. Well—the building should not prejudice them against its contents. They were perfectly distinct and different matters. In the contents they would have an opportunity of studying a collection of specimens of the manufactures and art of the entire world. After the first vague idea of multiplicity was got over; if there was one thing which more than another would startle the philosophic observer (to a great extent it was so in 1851—it would be ten times more so in 1862), it was the utter impossibility of distinguishing were art ends and where manufacture begins;—or perhaps he should say, where manufacture ends and where art begins. The extraordinary mixture of the two together in every part of the building would be found to be most astounding. Every handiwork of man, every carriage, and steam-engine, every patent mangling or wringing machine that was produced by the wits of man, was not, so far as its appropriate form was concerned, a work of art. On the other hand, the most ideal productions,—the Madonnas of antiquity, the Apollos, the Venuses, the great cathedrals of the Middle Ages, being produced by men out of stones, were, in that sense, manufactures. The distinction between art and manufactures it was next to impossible to define. In some productions, the steam-engine, for example, the manufacture appears so strongly and strikingly above the art, that no one would call them anything else; while those world-famous pictures and statues were so clearly works in which the ideal dominates over the material, that nobody in the world would call them anything but works of art; but between the two lay a vast debateable ground,—a large collection of unconfirmed border states, which might, in various aspects, belong to either manufacture or art. That was the ground on which the Architectural Museum desired to expatiate, and wished to make their own. He owned that, standing up on behalf of the dignity of art manufacture, he had a certain right, not personal, but hereditary, to speak of it. He could not help remembering that it was his father who, fifty years ago, proclaimed that all objects, even the commonest in life, might as well be designed after the rules of beauty and proportion; and he was happy to see that the good seed sown so long ago by Thomas Hope had produced an abundant harvest. But still the work had not been done as it was proposed here to do it. Previous efforts, one by one, after a few years, came to nothing. They were either started with the design of some great man, who came down like a tornado and carried all before him, or else they went to the foundation of schools of design, which were to produce working drawings which the workmen were implicitly to follow. In short, nothing was done but to improve designs, or to create designers from a superior power. The Architectural Museum did not want to dictate designs or to create a school of designers. They wanted to improve the quality of the man who was to carry out the designs; to teach the workmen to train their hands, to cultivate their minds, to interest them in what they were doing, so that it might be carried out with love, and truth, and feeling. The system of creating designs was very good and very right and necessary. If it did not go on the work of that institution would be impossible; but the peculiar function of the Architectural Museum was not that of a school of design. It was a college to which the art-working man might go and learn the craft and secret, which would enable him to understand, design, and work it out with the spirit of the designer. It was said, however, that it was not only a museum of architecture, but of art. Now what he asked was, distinction between architecture and art? It was one of those things which it was impossible to grapple with. Take metal-work. Was it not essentially architecture, except as to fire-irons and knives and forks? Take wood work. There was the graceful screen in church or hall; but what design was in it? What knowledge of material was to be found there which was not at their service in moveable furniture,—tables, chairs, and sofas? He said this in defence of the manner in which the Architectural Museum had gone on, taking up art manufacture and encouraging it in various ways, without very much asking or very much caring who said they were acting as an art—and not as an architectural museum. They defied their impugners to draw the line which they were utterly incapable of drawing themselves. He might mention that there would be two courts at least in the Exhibition in two different classes, each of which would in itself be an exemplification of the particular principle on which they first started; and in one of which he was glad to say space would be reserved for this museum, and in which the most meritorious of the art prizes of that evening would be displayed.

The president then proceeded to distribute the annual prizes to the art workmen to whom they had been awarded; making special and highly complimentary reference to the work of each, and stating that the competition had been extremely close and the works of great individual merit; adding that Mr. S. C. Hall had undertaken to include the prize works of the evening in his "Illustrated Catalogue" of the Exhibition. The prize list we have already given.

Mr. S. C. Hall said, that he had had the happiness to attend the meetings of this society from its first formation; and had witnessed with great pleasure the prosperity of the institution and the progress of the art-workmen. He would see with exceeding regret any absorption of that society into the great Babel in the midst of which they were assembled. From the day it took place he would date the downfall of the society, and the arrest of its efforts to do good to the art-workman, to benefit the artist, and to promote the intelligence of the art-manufacturer. His direct interets

in the society was only in one of its three divisions. He had little to say to architecture, but he had much to say to the art-workman. Having had long experience of them, he believed that the reason we cannot compete with the art-producer of the Continent was that the intellect of the art-workmen was not more cultivated. He would, therefore, deplore any event which could lessen that great means of usefulness which, up to this day, the society had promoted so largely. As he knew that making their names known to the world, year after year, was a great portion of the reward which the successful competitors naturally and reasonably looked for, he intended to give the prizes of that evening a place in the Art Catalogue he was preparing. He had stipulated that, with respect to every work to be mentioned therein, the name of the designer and of the art-workman who had carried out the design should be also published. He should deeply regret any act that would absorb the society into that large one from which emanated that cumbrance of the earth which was erected in their immediate neighbourhood. The foreigners who would visit it would carry away with them a very mean idea of the artists of England—ignorant of the fact that not one of them was consulted about it. He was present at the birth of the society; but he feared, if the amalgamation took place, he would be present also at its death.

The Rev. William Scott observed, that a great deal had been very eloquently said as to what the Society had done. He would for a moment allude to a more uncongenial topic, and say a word as to what they had not done. Of their success they had sufficient evidence before them that evening, in the works of the successful competitors; but he had to express his surprise and extreme regret that in the matter of iron-work—of manufactured iron—there had been no competitor worthy of a prize. That was a very sad state of facts in a country in which of all others the reverse might naturally be looked for. No one who remembered what metal and iron work was, but should regret the state it had arrived at, if they were to judge by the specimens sent in. But such was happily not the case, as he could state, that in a place he was well acquainted with, a common blacksmith had executed works of surprising delicacy and skill, fully equal to any of those of the Mediæval times. Unfortunately no such specimen had been forwarded for competition. He (Mr. W. Scott) would not follow Mr. Hall through his criticism of the neighbouring building; but he ventured to say that the existence of the building was most important, as showing the necessity that there was to cultivate the mind of the art-workman. Hundreds of thousands of pounds had been spent on the building, yet no human being could point out one single inch of it, either in the original idea or in the construction, which appealed to the mind or called out the energy of the art-workman. Further than that he would not go. The building might have its merits or its demerits: into that subject he would not then enter, but this he would say, that there was throughout its entire extent no occasion afforded for sculptor, for painter, for worker in iron, metal or wood, for designer, or for executor, to show one particle of that diviner portion of the human being,—intelligence, skill, or mind. He did not deny it was a wonderful work, — that it was a large work, — that the engineering reflected credit—infinite credit—of a particular sort—on those who designed it. But he maintained that, with such a building in their immediate neighbourhood, the greater was the necessity for an institution like theirs to educate men's minds, and to call out and cultivate their intelligence.

Mr. G. G. Scott, R.A., in moving a vote of thanks to the president (which was carried), took occasion to say a few words as to the position of the society. The chairman had spoken of their position, and Mr. Hall had warned them of their danger. He (Mr. Scott), while he appreciated the warning, did not see why the danger should be realized. The Department of Science and Art had their special duty,—the promotion of art in connexion with manufacture. A more important task could not devolve upon any institution or department. The object of this Architectural Museum was to promote art in connexion with architecture, which was so closely allied to the other that if a union between the two was fraught with danger to either, there should be some great and palpable defect in the carrying out of the respective objects; and he, for one, could not see how such could exist. He believed the Department of Science and Art were labouring very earnestly, and undertaking a great deal, to carry out this object. This institution also was very earnest in carrying out theirs; and it would be very discreditable to one or both if a union were fraught with danger to either. He had more faith in the earnestness of both than to anticipate or to fear any such result. He hoped and expected, on the contrary, that, instead of having anything to fear, they would have much in the future to congratulate themselves upon.

PARIS AND ITALY.

THE works for the foundations of the new Paris Opera-house are progressing rapidly. The excavation is completed, and piles are being driven on which the stonework is to rest. The whole extent of this important building is to rest on concrete, and the preparations made for the construction of the Opera-house are in harmony with the largeness of the undertaking. The works are divided into three stages—the lower, the middle, and the upper. In the first are those employed in receiving the concrete and putting it into the work; also the carpenters' workshops, and the pile-driving machine, worked by steam. The sheds for the machinery, &c., of this lower portion are supported on timbers, to be out of the reach of infiltrations. All around this portion of the works a stage has been erected, forming a broad causeway, on which the cranes, capstans, &c., which require a solid basis are ranged. This is the middle stage. Lastly, on the upper stage are placed supplies of broken stone, lime, cement, and the machinery for mixing the concrete. Adjacent are the offices of the architects, contractors, superintendents, conductors, and watchmen.

The concrete, which must be laid to the amount of thousands of cubic mètres, is mixed on the upper stage: when thoroughly fit, it is discharged into waggons, conveying it on a railway to a stage, where it is thrown down a shoot, and spread by barrow work. Close by the Opera, at the left of the Rue Mogador, other works are going on, which, though less considerable, are still interesting.

Four large buildings are being raised opposite the western façade of the Hotel de la Paix, and the preparations for the work are on a well-organized scale. All the materials are delivered into the foundations by means of a tramway with numerous turntables; so that the heaviest blocks, &c., can be moved with ease to any portion of the work.

The southern doorway of Notre Dame, Paris, called *Porte Sainte-Anne*, or *Porte du Zodiaque*, has been completely restored; as also the pedestal for the statue of the Virgin Crushing the Dragon. As soon as this statue is erected, those of the saints will be placed between the small columns, so as to complete the ornamentation of this entrance. This doorway was constructed in the commencement of the fourteenth century, and the expenditure was defrayed by a portion of the property confiscated from the Templars.

A sort of Parcel Delivery Company has been established in Paris, and in a few days will be in extensive operation throughout the capital. It will include all sorts of luggage and parcels. The Prefect of the Seine, by a warrant of the 10th ult., has conceded to the director, Mr. Bornier, the necessary "stands" or "ranks" for the organization of a regular service, to be commenced with fifty carriages of the "*Factage Parisien.*"

A modification has just been introduced into the system of French railways, which, though at first sight it may seem of little importance, is one of great interest to the railway world. It has been proposed to substitute cast-iron sleepers for the wooden ones now adopted almost universally. For some time past this substitution has been regarded as impracticable on account of the rupture occasioned by shocks, &c., but Mr. Camus has applied a sort of felt cushion which effectually prevents all risk of fracture. In order to set aside all doubts on the matter of the use of cast-iron sleepers, it will be sufficient to state that experiments and constant working trials on the Paris and Lyons railway have proved that, after eight months' continued traffic, the system was perfectly successful. The Charleroi *Journal* mentions that above 50,000 sleepers were employed for the repairs of the Bâle railway, 60,000 for the second line of Mulhouse, and that the Midi of France used up 60,000 in the same year for keeping up the line. All these timbers are of the first quality, and subjected to very severe inspection; so that it might be feared the forests at some future period would fail to supply the quantity of wood requisite. The economy resulting from the employment of iron would be, it is said, from 50 to 60 per cent.

There are at present in the Arsenal of Civita Vecchia eighty cases, containing a portion of the casts from Trajan's column, executed by the orders of the Emperor of the French, and which are soon to arrive in France. Some casts were taken in the sixteenth century, but they are very much deteriorated. Those that are intact, or in a pretty good state of preservation, are in the *Ecole des Beaux Arts*, and of course invisible to the public. Moreover, these casts were taken in a very unsatisfactory manner, if we can judge by the copy, at Rome, which has never been carried about, and is in the same state as when first made. The Pontifical Government has decided upon using the moulds made by the French, of the bas-reliefs of the arch of Constantine, which were a portion of one of Trajan's arches, in order to complete the modern Roman collection in the Academy of St. Luke.

A correspondent writes to the Vienna press, that the repairs will shortly be commenced of the dilapidated and damaged portions of the pavement and mosaic work in the Church of St. Mark, Venice. Every one knows that the restoration of these mosaic works could not hitherto have taken place, for the simple reason that the composition of the golden mastic, or paste, with which they were executed, was a secret that the inventor, deceased at the end of the fifteenth century, had taken with him to the tomb. An Italian chemist, however, of distinguished reputation, has discovered the secret of this composition, and has made with it some experiments, attended with the most satisfactory results.

Fresh excavations are being carried on in Pompeii, near the theatre. Early last month a discovery was made of fresco paintings, in a wonderful state of preservation; representing, among other subjects, life-sized figures of genii playing on flutes; also were brought to light ancient inscriptions, traced with the style (Ital. *graffiti*), and a painting representing two large serpents (*genii locorum*), near which the following inscription occurs in fine characters:—"*Otiosis hic locus non est discede Morator.*" It seems that these remains formed portion of a public edifice, the uses of which are unknown to us.

In Herculaneum the Government has ordered the excavations to be carried on actively. Towards the latter end of December last two lions were found in that town, half a mètre long, and carved in marble. The style was Grecian, of a high order of art. Other interesting objects have been recovered, such as fragments of burned wooden furniture, chairs, boxes, coffers constructed of bamboo or cane, grindstones, &c. Signor Joseph Fiorelli, inspector of the excavations, is in treaty with the land-holders, with a view to purchasing the necessary ground, in order to carry forward the works on a large scale.

At Capua the excavations are to be shortly retaken in hand, with a view to bring the amphitheatre to light.

THE QUESTION OF CLASSIC AND GOTHIC ARCHITECTURE,*

Dispassionately Considered by a Retired Architect.

AND now comes the question, whether for any building in Great Britain, saving only the church and its dependencies, the most obviously serviceable style of architecture at hand is not the Græco-Roman in some one of its later modifications? Which of these are to be selected, will depend on the fourth of our pre-stated conditions. The lighter Italian may suit for the country villa, the severer Roman for the town. Even the purest Greek *may* find its full opportunity, and, as before intimated, the Renaissance its allowance; but be all this as it may, has not the process of getting at the true thing been fairly stated? and would not the Palladian character of ornamentation, with the improvements that have been and are *yet to be cultivated*, more readily and honestly express the truth, in respect to the general purpose and distinctive character of all civil and social structures?

We say "yet to be cultivated," for the study of Classic architecture has not by any means received that concentrated attention and systematic investigation that has been bestowed on the Gothic revival. Far be it from the writer's purpose to justify the common-place habit of making any sort of building owe its architectural effect to the ostentatious display of a huge Greek portico—the end elevation of a heathen temple stuck against the middle of a building which otherwise

* See page 153, *ante*.

would resemble a barrack range. It may be even allowed that the most elegant and majestic Greek exterior in Europe—that of St. George's Hall, at Liverpool—is not accordant with its beautiful Roman interior; and it requires a due consideration of the compulsory circumstances that interfered with Wren's original intention to defend the pseudo-architecture over the aisles of St. Paul's and other parts of that beautiful model. It may be, that a more perfect example of artistic perfection, in the legitimate use of Italian ornamentation, is not to be found than the Travellers' Club House, in Pall-mall. But all this simply proves a yet imperfect appreciation of the fulness that exists in the vast museum of Classic design for the supply of all that is most appropriate, expressive, and beautiful, for all ordinary service. The "Institute of British Architects," the "Architectural Society," and the "Architectural Publication Society," are all too laudably catholic in their views to admit the exclusive cultivation of any particular branch of design; and, for the same reason that an especial *Gothic* Architectural Society has been necessary to the revival of the true spirit of ecclesiastical art; so it may be, that a distinct Association of *Classical* students is required to collect and assort the abundant material of Græco-Italian art; to direct its just application, and to bring about a result not less satisfactory than that which is now illustrated in very many of our new Gothic churches. Classical architecture still remains chiefly in the hands of the profession, however the late division in the House of Commons may indicate a growing public sympathy; while the Gothic feeling has, by the care of its reverend fosterers, penetrated into the very hearts of a refined and intelligent multitude. It has reached the ladies' boudoir: it has extended from church-building to book-binding, and needlework, and printing, and illumination of title-pages and initial letters: tradesmen send out cards in perplexing Old English characters: Bradbury & Evans announce their *Once a Week* in Mediæval type; and even our pre-eminent *Punch*, who formerly so ridiculed the Mediæval mania, is now the advocate of the Gothic fashions! However cogent may be the reasonings of a no-party man towards bringing all parties into a state of harmonious catholicity, it would almost seem desirable to institute, in *concert* with the "Diocesan Architectural Society," a "National Palladian Society," to bring into fashion a more extended regard for architectural philosophy.

But to come to the point. Wherein, save for the church, &c., as aforesaid, has the Gothic mode *any* advantage over the Græco-Roman? Where the pointed window is admissible, so is the Roman semicircular; where the square Tudor window is applicable, there may be employed the Greek; where the larger compound window with transomes and mullions is used, there may be applied the Venetian, or other Italian columniated ones; where unneeded buttresses are affixed, there may the attached column or pilaster, with at least equal propriety, be employed; where the inclosed Gothic porch is required, a corresponding appendage, differing only in its being Roman, is ready for the Italian façade. The balustrade matches the pierced Gothic parapet; the Gothic corbel has its rival in the Roman console or bracket; no Gothic cornice can compete with the Corinthian of Jupitor Stator, whose capitals also are unapproached in Gothic art; and, whatever may be said for the transcendent beauty of the stone tracery in the windows of our churches, it would be absurd to compare the moulded jambs and heads of the Tudor domestic windows with the bold and effective decoration of which a Roman window is capable. There are no surface Gothic enrichments to which there is not at least a match in the friezes, bas-reliefs, string-courses, and rusticated coins and basements of the Italian palazzo. While the Gothic arcaded porch has its respondent in the Roman one, there is nothing in Gothic design to rival the Greek portico; and, if the tower and spire be exclusively accordant with the genius of Gothic art, so is the strictly hemispherical dome equally an exclusive feature of Rome. Wren's beautiful examples show what the Italian architect may do with the steeple; and the cathedral of Florence, with the Pisan baptistery, exemplifies the possibility of Gothicising the dome with impressive effect; but it must be on a *multangular* plan; while only on the *perfectly circular* plan can we employ the continuously unbroken entablatured peristyle, which gives such fascinating charm to the Tivoli temple, and the domes of St. Paul and St. Genivieve at London and Paris.

To say the least of it, therefore, as it regards a parallel of external features, the contest between the Classic and Gothic styles, so far, results in a drawn battle—*i.e.*, as claimants to universal adoption; and due honour being thus candidly done to both, it only remains to assign to each the particular appliance to which each is more particularly suited. There is, however, no necessity for justifying the impression so unanimously felt as to the fitness of the Gothic for the church; and it only remains to show wherein the Classic varieties of detail are more suited than those of the Gothic to decorate all ordinary non-ecclesiastical structures.

We shall not consider what may be done with any one great room, occupying the entire length and height of a building, either vaulted like the nave of a cathedral, or covered with an ornamental roof without a ceiling, like Westminster Hall; because no one will deny that the style of an edifice should be such as will equally suit every part of it. Neither will it be necessary to show the especial suitability of Italian or Greek architecture to the auditorium of a theatre, a concert or ball room, a gallery of art, or any room of popular assemblage, where light, either of the sun or gas chandelier, lightsome cheerfulness, and the best means for seeing and hearing, demand particular attention. It will be enough to regard our Box-model as comprehending an inclosure of many rooms, of varying sizes, on several floors of differing heights, having necessarily flat and plastered ceilings, with window-openings of the simplest shape, and size no more than adequate to their purpose. It is capped by a roof not intended for anything but a covering, because rooms within a roof are cold in winter, hot in summer; and they greatly increase the woodwork, which, in reference to decay, if not danger by fire, is not desirable. The pitch of the roof is, for reasons before stated, kept at its minimum lowness, whereby, also, a less amount of surface, at a less exposed elevation, is presented to the beat of the weather. The choice must lie between a pitch characterized by its height, with good reasons for the same, as in a Gothic building; and the pitch characterized by its depression, with equally good reasons, as in a Greek one. The practical reasons for both are so equally divided, there is no just cause for quarrel in this case.*

The next question before us, refers to what is equally common to Classic and Gothic design, in the choice of a parapet and cornice, or merely a cornice at the eaves of the roof. In either case the Roman cornice is by far the more ornamental; and denied the imposing effect of the high gable with its large pointed and richly traceried window, we adopt the Classic cornice, as affording, if need be, an opportunity for the Greek pediments in termination of our low-pitched roof. As the height of the walls may admit or require horizontal lines, we may then merely apply a frieze, plain or enriched, or complete the entablature with an architrave; the whole comprising a crowning range of decoration which a Gothic building, under the same conditions, could not legitimately exhibit.

We next come to the windows of the top story, the rooms of which, being of less height between floor and ceiling than those below, will derive sufficient light from the Roman attic, or perfectly square opening. We take them as they are in the box-model, simply framing them with a sill and moulded architrave, because as single lights they are too wide for Gothic proportion, and not wide enough to admit of mullions; while the drip-stone and moulded jambs of the Tudor mode would be poor in comparison with the enrichment of the Greek framing; the mullion also would diminish light, present additional challenge to weather, render complex the means of admitting air, and increase the cost—the more so still, if the whole is to be so enlarged as to preserve the amount of glass which the simpler method would at once admit.†

The same reasonings, of course, extend with additional force to the oblong windows of the stories below, wherein transomes as well as mullions encroach on the primitive space of opening; and if arched heads with tracery are introduced, the circumscribing outline must be greatly extended to preserve the original amount of light. Rather let us transfer the cost of work from within the opening to the bold and effective ornamentation of its stone framing; adding frieze and cornice with consoles to the second downward range, and engaged columns with pedimented entablatures and balustered balconies to the third. In the next floor range may be applied the semicircular arched head, not only for variety's sake, but the more important one of good construction; and the decoration now becomes equally varied from that of the windows above, in the archivolt, or the suitable use of the chisel in marking the arch voissoirs and ornamenting the keystones; so bringing us down to the basement story, where the general use of rusticated work gives further variety and a satisfactory appearance of stability to substructure.

So far, we have seen what successive varieties of distinct, yet harmonizing and legitimate fenestration, we may display in a Roman façade of five stories; still remembering that a sixth story may be had in an attic range above the cornice, irrespective of the balustraded parapet, with its pedestals, vases, or statues, which offer a parallel line of decoration to the pierced Gothic parapet with its pinnacles. It is admitted that a Gothic elevation may be also varied in its successive horizontal ranges, with pleasing and even imposing effect; but will any architect say that it can be *so* varied, and with *such* imposing effect, by the mere application of the ordinary means which are ready to the hand of an uninventive student merely acquainted with the common precedents of Classic design, and which leave the incipient forms of the box-model precisely as he first finds them?

This reiteration of the "box-model" may move the reader's smile and the fanciful Gothicist's impatience; but we must stick to it—binding our opponent, if we have one, to the conditions under which we are ourselves submissive. We are not now speaking of what we may do with the play of our own invention, but of what the two styles under consideration will instantly do *for* us, without the exercise of our creative genius.

The window question alone would, we think, conclude in favour of the Italian style. The projecting Gothic oriel on its corbel is doubtless a beautiful feature; but the use of such can but be rarely occasional; and as to the bay window, it is alike facile to Greek and Goth, its character being decided by that of the building generally.

We next come to the doorways. Supposing no porch or portico to be required, the Gothic may be rendered exceedingly ornate, *on a near inspection*, by its enriched moulded head and jambs, its deep recess, &c.; but it can have nothing which, at a distance, will be so telling as the stone framework of the Roman portal, with its engaged columns and their entablature, pedimented or not; while the Gothic drip-stone and carved spandrils will be, as remote objects, poor compared with a boldly-projecting cornice and carved trusses. These, in their simplest form, will give an emphasis to the Classic doorway, which cannot be afforded by equally simple Gothic means.

The Gothic porch, with its high arch and crowning gable, its buttresses and pinnacles, may indeed be rendered most imposing; but our box-model is suggestive of no such thing. The roof of *our* simply utilitarian porch, if not a flat, has the same low pitch as that of the main structure; and the required appendage can be no other in character than the full development of the pseudo-architecture we have been describing as the decoration of the Roman doorway. But it may be desired that a shelter for carriages be brought out in front of the door. If arches be employed, their lateral pressure and their solid spandril-work will demand

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* The Gothic roof, in its grand development as a *visible* internal feature, is without a tie-beam, and is therefore, even as a mere matter of constructive necessity, of lofty pitch, to relieve lateral pressure. The Italian roof, unseen from within, has its tie-beam, and may, therefore, be extremely depressed. That tie-beam supports the plastered ceiling, with which, strictly speaking, Gothic architecture has nothing to do. Where Gothic roofs are high-pitched, without any *practical* necessity for it, we must assign as the cause, the outward sign of an inwardly exalted grace.

† Here we might rest on that truly and peculiarly *English* invention,—the lifting pulley-hung sash, which may indeed be almost termed the very germ of domestic English architecture. There is no other such compact contrivance for keeping out the weather or letting in the air; and, saving in such sitting-rooms as require windows to reach to the floor and serve as doors, it should be always employed. Every architect will acknowledge the difficulty of adapting the Gothic form to its reception, and the *false appearances* which must be involved in making the seeming solid nothing but a casing of joinery; while every housekeeper is aware of the evils that attach to the hinged casement, whether it opens outwardly against the wind and rain, or inwardly against the window-blind and curtains. Still, the hinged folding casement is as suitable to the Italian window as the single casement to the Gothic one; while the lifting sash is *not* admissible on any critical grounds to the latter. The true Gothic architects never contemplated either wooden mullions and transomes, or wooden casements. Stone and iron were the materials solely employed. The difficulty of procuring glass of large size was the very occasion of the stonework and tracery of their windows. Had there been no *necessity* to "mother" the invention of stone tracery, it is likely the most fascinating feature of Gothic design would have remained unthought of. The plain lancet opening, single or clustered with others, would probably have continued; and the windows of the Temple Church, with that of "Five Virgins window" at York, might have still existed as the leading models of Gothic fenestration.

a body of masonry more interceptive of light than if the shelter be formed of simple pillars and their entablature. The germ of the thing required is a shed of posts and beams, covered with a lead flat, or roof of low pitch. The same reason that avoids the Roman arcade discards the Gothic one. We take at once the obviously-suggested Greek portico as the most immediate means of realizing gracefully in stone the convenience required.

And now, recurring to the façade generally, we may have reason for more mural enrichment than it yet exhibits. The employment of rusticated quoins, or of rusticated work in extension, on the surface of the lower stories, is an allowance not afforded in Gothic design; and, beyond this, the appliance of pseudo-architecture is surely not less permissible in Classic than in Gothic structures. Unnecessary buttresses have no better authority in the latter than engaged columns or pilasters in the former. Take Inigo Jones's Whitehall building. Choose between what it is, and what it would have been had the vertical lines of column above column been those of buttresses. Carry on the Gothicising process. Convert the crowning balustrade into a pierced Gothic parapet: despoil the basement of its rusticated work, the windows of their architraves and entablatures, the sub-frieze of its festoons, &c., and see whether an equal amount of legitimate Gothic ornamentation (leaving the general outlines and window-openings as they are) would improve it; or, rather, whether its present amount of beauty would be preserved. Take the interior, with its noble ceiling, its galleries and pilastral decorations, as Jones left it, and say whether, as a room of its purpose and proportions, it could have been equalled by a coincident amount of Gothic expenditure. We may, indeed, take this particular fragment of a building (for it is no more) to illustrate what we have been arguing, though it develops but a few of the facilities afforded by Palladian art for giving grace and dignity to an ordinary structure. Even in the entire design, as it appears on paper, we by no means see *all* the appropriate beauty which Italian architecture affords for common use. References in greatly additional evidence might be made to the buildings of Wren and his school, and to certain of the club-houses in Pall-mall and its vicinity.

And now, leaving the exterior of the building, we have to consider which of the two styles, Græco-Roman or Gothic, is most readily applicable, and which can be most carried out to the development of its distinguishing characteristics, *throughout* the building's interior. Positively, the only rooms in our box-model admitting of genuine Gothic treatment may, and most likely will be, the *cellars* and the *garrets!* In the former we may realize the Gothic crypt, and in the latter we may have, "in base epitome," the visible and ornamental roof of the Gothic hall; but, otherwise, among all the rooms of the various floors, there may be none whose proportional length, altitude, or fenestration, or whose utilitarian provisions, are in the slighest degree suggestive of Gothic treatment. All may be square, or moderately oblong in plan, saving only the passages; and all, without exception, may be rectangular in section; and we put the question, whether flat ceilings and plastered walls, with nothing but a plain running cornice, skirting board, with simple panelled square doors and shutters, having *plane*-run architraves and mouldings, are compatible with Gothic *characteristic?* The ceiling of an Italian or Greek building may with propriety be nothing more than a *slab;* but what is a Gothic ceiling without its corbelled or bracketed girders, its intersecting beams and bosses? And what is a flat ceiling *with* them but an Italian one Gothicised? The mere use of Gothic mouldings does not render a work Gothic. Lastly, is not the Italian architect as much at liberty as the Goth to make his girders and beams subservient to beauty in the sunken panelled work of his ceiling, with all its richly ornamented soffits and rosettes, its coves, consoles, &c.? May he not panel his walls with oak, and more than rival all that the Gothic joiner can effect, for the very reason that carpentry, in its most legitimate use, has been the leading element to the choice of the Italian style? The utmost amount of internal decoration that an ordinary *Gothicised* building can exhibit may be fully equalled by what the *veritable Italian style* will afford; while the latter admits, without any loss of characteristic, a simplicity that leaves the other with no character at all; to say nothing of the less cost at which the equivalent of Gothic ornamental work can be supplied by the Italian joiner. The day of Batty Langley's "Carpenter's Gothic" is happily passed away for ever; and we are, therefore, only speaking of the choice between what the *true* Gothic enforces, and what the free Classic allows.

The writer had prepared the compartment of a façade decorated in the Italian, and another in the Gothic style, taking the box-model as the groundwork in both styles; but he might not have been received as impartial; and the reader is therefore only addressed by the model in its simplest state. That this might be the best possible form for a town-building, under the restrictions which, in ninety-nine cases out of a hundred, will prevail, will surely be admitted. No deviation therefrom can enhance its mere utilitarian properties, and, therefore, none is allowed. Take it then as it is; decorate it at the same cost, in the Palladian and Gothic styles, and see whether the former is not in all respects immediately and thoroughly accordant, while the latter can only struggle to effect a partial result, in which "the attempt and not the deed" is "confounding."

The characteristic features of Palladian architecture may be more fully developed in a single façade than those of Gothic design,—at least in an elevation of limited extent; *i.e.*, the *return* fronts, or ends, of a Gothic structure can be less readily spared; and, therefore, the Palladian style is generally more fit for street architecture where only one front can be shown. And again, if the building be at the corner where another street diverges rectangularly, allowing two fronts to be shown, the necessity of windows in the second front corresponding continuously with those of the first, will be more compatible with Palladian management. Lastly, if the building, though entirely insulated, be necessarily cubical in form, with windows uninterruptedly ranging on all sides, the sacrifice of Gothic characteristic must be great, while there need be in the Palladian model no sacrifice at all. The box-model being remembered, how obviously is the Palladian treatment at once suggested! Here is no opportunity for the gable-ends, their chimney-backs, and aspiring shafts. The lofty proportions require horizontal correcting lines, not the aid of vertical ones. If buttresses be admissible, so are pilasters; but the district surveyor may be called upon to disallow of buttress projections, not only in regard to their intrusion on the pavement, but also in the denial of nuisance-corners. We are speaking only of what *may* be, and therefore of the style that will suit such probability. To recess a street building for the sake of giving space for its projections is, indeed, to purchase a minor at a major cost, but by no means improving to the street generally, since the recessed building will be more or less out of sight until the spectator comes in front of it. Better, then, adopt a style suitable to *flush* continuity; and which, however ornate, will fall in with that *plane* character of elevation that suits the locality.

Instead of an illustrating woodcut, it will be enough to refer to the plain brick street-fronts of every town in her Majesty's British dominions, as the almost unvarying box-model that simply calls for artistic decoration. In a utilitarian sense they are declared to be unimprovable. Take them, therefore, in the first instance as they are; and, as they are higher or lower, wider or narrower, with more or less space between their windows—or as they are more or less important in respect to their purpose or the rank of their occupants,—give them the balustrades, cornices, string-courses, pilasters, architraves, balconies, porches, &c., which the folio of Sir William Chambers's "Civil Architecture" affords. Let these be modified, or improved upon, as fancy and genius may operate; but still it is confidently assumed the Classic character will be maintained as the best as well as readiest for the purpose.

The full development of Gothic beauty requires either a simple form of great proportional length, or a compound form, still of lengths abutting against or intersecting each other. High pointed windows or bays may appear with admirable effect; chimney-backs and towering shafts may rise; and the high pointed gable may present itself. Towers may be placed over the intersections, and indeed elsewhere *ad libitum;* and the buttress may have full play in each case. But, if the box-model be demanded, what can the Gothic architect do with it? At the same time, be it observed, that all these forms are quite susceptible of Classic treatment, when you put pediment for gable, and pilaster for buttress.

Let it be further remembered that the high pointed window is the result of *stone vaulted intersection;* and that the lofty gable either harmonizes with the window-head, or is rendered more legitimately necessary by the internally exhibited Gothic roof, into the hollow of which the great window pierces, and which roof, therefore, being without a tie-beam, demands a high-pitch, if only in consideration of its lateral pressure. Let no candid critic blind himself to the fact that the eminently distinguishing features of Gothic design owe their existence to constructive causes that have no existence whatever in many a modern Gothic building, if indeed we can refer to any ancient one except the church, or great hall, or barn. To the church, indeed, we must come at last, as the *only* building in which the beauty, the pictorial variety, and the sublimity of Gothic design can be worthily displayed. Other structures may be *Gothicised*, more or less, to the infinite gratification of the lover of the *picturesque;* and, in many particular instances, with not less propriety than effect. In addition to the reasonable appliance of Gothic architecture to the mansions and houses of the clergy, to church colleges and schools, and even down to the sexton's hut, we may admit it as having a fitness for many rural localities, and as yielding a charming modification for cottage and lodge design. Let the "Old English gentleman" do what he will with it in his own park; but, in the squares and streets, crescents, circuses, and terraces of our towns and cities, let us, with the exceptions above stated, apply all the accommodating details which accompany the porticoes of Greece and the domes of Classic Italy.

In brief recapitulation. The question has not been Classic *versus* Gothic, but the equal advocacy of Gothic *and* Classic in their proper places. Instead of desiring a "defeat of the Goths," the writer would desire them to be satisfied with the triumph they have achieved in reviving an architecture so sublime that it should be hallowed as especially that of God's own temple, leaving the Classic varieties to all buildings of secular purpose; and rather aiming to improve the taste of the Classic modifier than to subdue it.

It has been argued that the principle of good architectural design should be that of a simple utilitarian beginning, to be followed up by an attempt to perfect the mere box-model of the required building, without regard to any style whatever; and, this being done, it has been the writer's effort to show, that the Gothic mode of ornamentation will not fall more readily on the church than the Græco-Roman on the civic hall.

The fallacy of regarding Gothic architecture as peculiarly English has also been argued; the conclusion of the reasoning generally being, that Gothic and Classic, with certain national modifications, are alike of European catholicity.

It has been assumed, on stated grounds, that the present feeling of many among the Gothicists (of women especially) has its cause in a mere love of the picturesque and quaint, and in certain unwarranted historical associations; and often without the slightest appreciation of the true characteristics and capable sublimities of Gothic design.

It is admitted, moreover, that, with little exception, the Classicals have not equalled the Goths in the true and full cultivation of their favourite style; and that, therefore, we have yet to see what might be effected by a corporation of Palladianists, united, determinate, and studious, as those of the diocesan Gothic school.

The Gothic partisan has been called upon to show wherein his style is so obviously suggested as the Palladian by the box-model of the civil structure: there being, in fact, more *pseudo*-architecture when such a building is Gothicised than when Italianised. It has been asked wherein, save only in the church, can the leading characteristics of Gothic art be carried out? It has been shown that no such vast opportunity is required for the full development of Palladian detail; that Classic ornamentation may be more readily applied to a rude model of Gothic form, than Gothic decoration to the body of an Italian model; that, in short, there are very frequently simple forms which defy Gothic treatment; while there is no form, excepting that of the church, to which Classic management may not apply. If there be some instances in which the contest ends in a drawn battle, there are infinitely more (especially in town structures) where Italian adaptation is free and immediate, while the Gothicist must often act with compulsion even to torture.

The influence of climate has also been deemed important in the advocacy of Italian architecture, as affording maximum light with minimum opening, and effective provisions against the beat and lodgment of weather; and the merits of the English lifting sash-window have been allowed their consideration in favour of the style which alone admits it.

The extremely different conditions of a building of several floors, from one open from floor to

vaulted ceiling or roof, as in the Abbey and Great Hall of Westminster, have been adduced; and a distinction has been made between structures of length, loftiness, and curved lines, and those of cubical bulk and rectangular construction. The advantages of the portico *vice* porch have likewise been alluded to, as well as those of the style which best comports with flat plastered ceilings, and with the abundant use of rectilinear carpentry and joinery.

Such is a general summary of the more practcal reasoniings which, as I codceive, lead to the final selection of the Palladian for every building of civil, commercial, or social purpose, however exceptive cases of *sentiment* or occasion may sometimes operate; and of course leaving every Englishman, on his own private *ground*, to consult his individual will. GEORGE WIGHTWICK.

SURFACE DECORATION.*

THE numerous objects that influence the distribution of colour in the different apartments of a building are not always under the control of the architect, particularly the moveable fittings and furniture, which are generally disposed by the lady superintendent and her upholsterer, and do not always improve the effects that have caused the architect much study and anxiety to produce; but, on the contrary, frequently destroy all concord with the worst possible taste. Furniture and furnishing should be as much under the control of the architect as the other decorations of the apartment or building; and, when an architect of taste is employed, I am sure the result cannot fail to produce more harmony than is generally met with in our interiors. The decoration of a wall, floor, or other subordinate part of a building, if designed on good principles, should bear the same relation to the leading objects of the room that a background does to a painting; yet not rendering it so tame and suppressed as not to attract any attention; but help to enrich the general effect, without depriving the principal objects of their legitimate attention. By a due adaptation of colour and form many difficulties in design may be considerably lessened; and faults in arrangement have not unfrequently been converted, by judicious treatment of surface decoration, into positive beauties. Light, above all things, should be well considered. It rarely happens that an apartment is too light; but if such ever should happen to be the case, a remedy is readily found in the application of colour. This will proscribe at once the use of dark colours, because they absorb the light: red and violet surface *en masse* are not at all favourable to the complexion: light blue is less favourable than green. The colour of paperhangings recommended by Chevreul as producing good and appropriate results are those which present designs of a light tone, either normal or coloured grey; upon a white ground, or the reverse; and in which the pattern is at least equal in extent of surface to the ground; for a small pattern has a very poor effect in large rooms. Patterns of two or more tones of the same colour, or those that produce little contrast, are preferable to attractive and glaring designs, which destroy the repose a wall should exhibit. Hangings are made to have very chaste and excellent effects with appropriate borders. We should first consider which harmony we wish to produce—the harmony of analogy or the harmony of contrast. The harmony of contrast is very suitable to surfaces of a uniform pure tint: for instance, a pale yellow ground with a monochrome ornament may be well relieved by purple and white in small quantities, with a little blue; for white surfaces with pale grey ornament, or *vice versâ*, are contrasted well with gold: orange or yellow may also be in tones with a very pure effect. The most forcible example of the harmony of analogy I can introduce would be yellow surfaces, with a border of orange, gold, or brass ornaments. The wainscoting or skirting plays an important part in apartments, where it is made high to resist the blows of chairs, &c., and should be of a dark rather than of a light character, and harmonizing with the carpet, which produces the best effects in dark colours. Ceilings, as a general rule, should be white, or of the palest tones of colour; and the cornice divided from it by a darker tone, particularly avoiding white parts, which would be confounded with the ceiling. The ceiling should be always separated from the walls by a darker or contrasting tint, and may be further picked out with darker tones, or relieved with gold. The doors, windows, and other finishings of an apartment are invariably painted or stained, as the case may be, of one colour. I think these may be varied with advantage: for instance, the door performs a different office from the skirting, and should be distinguished from it by a difference of colour; while the other parts may be separated by variety in the tones. The general colour of doors may be grey, tinged with the colour of the walls: the door-frame or architrave should be darker than the door. In the foregoing I have considered the uses of colour as applied to the surface, and completely concealing the materials. With some, particularly of late, the feeling is for an inconsiderate demolition of what are erroneously called shams. My space will not allow me to offer you but a limited defence for applied surface decoration: doubtless three or four coats in oil and a few yards of paper will cover a multitude of sins that would be unbearable exposed to view. I cannot bring myself to think (much as I have tried, and with due regard for the exposure of the true material) that the appearance of a stained deal door, in some positions, is preferable to a painted one, any more than I could admit that a grained deal door in imitation of oak is superior to a solid oak one. When the funds will only admit of deal as a finishing, which is mostly the case, the colour may be otherwise consistently applied without imitating any superior material, by plain tinting alone, which appears to me far more pleasing to the eye than many of the dirty stains and treacley surfaces invariably left by the stainer and varnisher. Moreover, it is not so easily renovated and cleansed; for, when it is darkened by time, or dirtied and unsightly by wear, I do not see how it can be made to take its place again with the other decorations of an apartment. With regard to walls, I think stucco as applied to the interior of secular buildings can never be abolished; neither does it appear to me a sham unless a superior material is represented on it: there is nothing that offers such a ready means of giving a flat surface to receive the charming effects of colour. The question resolves itself into this: if we discontinue its use, what can we replace it with that shall be as economical and answer the purpose so well?

The advocates for "truthful building" have condemned, unmercifully, I think, the use of stuccos and cements. There, doubtless, are many excellent arguments against their use; and for exterior purposes few will feel inclined to add to the mass of shattered incongruities that deface our principal thoroughfares. But with interiors it will be found more difficult to practise the precepts urged. One or two noble exceptions of late, however, have done much to show the practicability of the reasoning. Neither of these, though, it occurs to me, have grappled with the real difficulty. What substitute can we produce for the plastered interiors of our dwelling-houses and other assembly-rooms, which are certainly as much of a sham as the plastered walls of a church? How can we give the neatness, economy, and harmony with the surrounding walls, offered by a common plaster partition? A truthful wood panelling would certainly be a very discordant substitute; unless it were continued all round the walls; which would be exceedingly expensive; and it is very doubtful if the result would be as satisfactory. Again, there are many buildings where a positively showy and grand appearance is as essential to their success as the funds for their existence; and, lastly, its use is sanctioned in a degree by the best works of the best masters of all ages, and by them converted into a medium whereon the noblest conceptions have been pictured and rendered for ages imperishable. Let us not abandon, then, what others have turned to such good results, but rather endeavour to appropriate with consistency what universal custom sanctions, and at which good taste will find nothing offensive.

The ingenious imitation of valuable materials is sometimes so complete, that it is almost impossible to escape being deceived. I have been assured that the best judges have been mistaken in detecting the scagliola imitations of the dark green marble pillars from the real marble in the old church of S. Miniato, at Florence. I mention this as an instance to what perfection this art has arrived: of course much depends on the skill of the artist. It will be hardly necessary to observe that the greatest discretion is required in applying imitations of any kind; it is so easy to make free use of them: their cost being comparatively little is a great inducement to frequent and indiscriminate application, that may lead to unfavourable results, and bring into disrepute that which, used consistently, may be worked in with great advantage.

To Italy we must turn again for the origin of nearly all our plastic embellishments;—the fresco and gesso painting, the imitations of marble or scagliola, graffit to work, and many other simple and elegant decorations, that must be valued for the mind they exhibit only; for the material is frequently next to valueless. Fresco and other plastic painting is scarcely within the province of the modern architect's education; but the great interest now so apparent for its revival, and the prominent effect it must have in a building, induce me to say a few words on the manipulation, which I feel will not be without interest. A painting or other ornamental work, executed in water colours upon a freshly-plastered wall while the plaster is wet, is said to be in fresco, and known as *buon fresco*, or good fresco, in distinction to another process, known as *fresco secco*, or dry fresco. For *buon fresco*, a plaster formed of old and carefully-slaked lime and sand is roughly applied to the wall or other surface as a first coat: upon this another of a finer quality is laid: this prepares the surface for the *intonaco*, or fresco ground, which is of the purest old lime and sand. The application of this last coat is as follows:—The surface prepared for the *intonaco* is wetted with water until it will absorb no more: a thin layer of the *intonaco* is then applied to as much of the wall as is required for the day's work; and, when sufficiently dry, the outline is traced from the full sized cartoon, and the painting proceeded with in watery washes. The surface must always be moist, or the proper combination with the plaster will not be effected: the colours are mixed with distilled water, and are chiefly the earthy pigments, as vegetable and mineral colours are affected by the lime. Mr. Wilson, in his report to the Commissioners of the Fine Arts, gives the following mode of working the *fresco secco*, as practised at Munich:—"The plastering of the wall having been complete as for *buon fresco*, the whole is allowed to dry thoroughly. Before painting, the surface of the *intonaco* must be rubbed with pumice stone; and, on the evening of the day before the painting is to be commenced. it must be thoroughly washed with water mixed with a little lime: it must be wetted again the next morning; and it is then ready for tracing the outline and painting: the surface must be constantly moistened by means of a syringe. *Fresco secco* is a good method for decorative painting, for which it is now much employed."

The application of scagliola work is a comparatively modern introduction in England. I believe the Pantheon in Oxford-street is one of the first buildings in which it was used. Lanzi mentions it as invented by Guido Fasi, of Carpi, in the sixteenth century. The Florentines have carried this art to the greatest perfection, and had a public school in the Royal Academy of Florence for teaching how to inlay and paint it, which is in reality *gesso* painting, or plaster painted with colours in water: it absorbs the colour to a sufficient depth to allow of the surface being polished without destroying its brilliancy; and some of the effects are charmingly brilliant and enduring. This beautiful embellishment is not confined to the imitations of marbles only: the readiness with which it is adapted to any form, and the enduring polish it takes, render it susceptible of making useful and elegant appliances. To none is more commendation due than to the inlaid scagliola work, of which there are numerous valuable specimens in imitation of landscapes, figures, flowers, in the Florentine galleries and churches, and of which here is a very beautiful work intended for the International Exhibition, by Mr. Georgi, who has devoted considerable time and attention to all kinds of plastic imitation which are peculiarly Florentine; and I hope he will meet with the success his talents and perseverance entitle him to: the artistic skill in mixing the plaster to the different natural tints, and the knowledge and power of drawing required to produce a successful result, without any application of paint, can be readily conceived. The base of this material is the purest sulphate of lime, prepared with great care. Keene's cement is largely used for this purpose, and mixed with the different colouring materials of the hue required: the art of mixing these so as to imitate the marble required is kept by the artists as secret as possible: the polishing is effected by friction with grit stones to a level surface; then, with felt dipped in tripoli and oil; and lastly with oil alone; a lustre is obtained as durable as the most highly polished marble. Not only may the costliest and rarest stones be successfully imitated, but any combination of colours may be produced; for instance, purple with emerald green, siena veined with purple, or any other splendid caprice that fancy may dictate.

* From a paper read at meeting of the Architectural Association, by Mr. R. O. Harris, as mentioned in our last.

There is another kind of wall or surface decoration practised in Rome, Florence, &c., since the sixteenth century, and known as *graffitto* work. It is very simple and effective: two layers of plaster or cement about the eighth of an inch thick, of different colours, are applied to the surface to be decorated; the lower one serving as a ground, which we will suppose to be black; while the upper one is white, and softer than the under one; which enables the artist with his graver to remove that portion of the upper surface his fancy may suggest, leaving the black ground exposed. Very beautiful scroll work in outline has been introduced in the panels of pilasters, spandrels of archways, and other details: it may be said to be to an extent imperishable, and equally applicable for exteriors as for interiors. Here are some specimens from which you may judge of the effect:—some are in black and white: others show the application of two colours. It is not at all expensive: it may be executed for about 1s. a foot. Somewhat allied to this class of decoration is the very interesting process of engraving on white marble: its effect is particularly chaste and beautiful: its success, though, entirely depends upon the skill of the artist, as great care and experience are required to bring out the more delicate etchings and lines. The manipulation is this: the surface of the marble is covered with a composition not acted upon by the strong acids: the lines are then traced with a fine graver on this ground, leaving the surface bare: an acid is then floated over the surface which corrodes the marble exposed by the graver: the lines are then filled in with a black composition: the whole is cleaned off; and the delicate etchings of the graver exhibit on the marble a beautiful outline with all the fineness of a pen drawing. Here is a specimen. The compactness of a marble texture for producing fine lines is of course superior to such as Caen or Bath stone. To show the applicability of this mode of decoration to common stone, I may instance the interior of the Church of St. James the Less, at Vauxhall. Here the principle is much the same, the only difference being,—the incisions at the church are made with a chisel instead of the acid; and, being in freestone, are necessarily much coarser. I have been informed that the white marble pavement of the room lately built in the Museum of Natural History, at Florence, to the memory of Galileo, is engraved after this manner, and represents a full-length figure of him, and all his different inventions and discoveries, with very satisfactory results.

There is one more kind of plastic imitation of marbles extensively applied in Venice to floors, and known as Venetian pavement: it has also been used very much by the ancient Romans, and known by them as *opus incertum*. It allows of being treated with much fancy and ingenuity; and when good cement is used it is very durable. It is made of small pieces of marble (or imitation thereof), of different kinds and colours, as fancy may suggest; mixed like concrete with the cement, forming the imitation required: this is floated over a well-prepared concrete surface; and when dry it is ground and polished; forming a very beautiful and inexpensive flooring, of which here are some specimens. By giving variety to the colours endless design may be introduced, which may be carried further by applying any kind of geometric pattern: it is one of the cheapest kinds of paving known.

THE COST OF SOOT, CESSPOOLS, AND FOOLISHNESS.

IN connexion with the British and Indian army estimates, an honourable member called attention, lately, in the House of Commons, to a charge of 5,891*l.* for sweeping chimneys. If it cost such a large sum for the clearing of the chimneys of the offices, barracks, &c., connected with our army, how great must be that of sweeping all the chimneys in the British empire? If this sum may be taken as affording something like a scale for the amount expended for chimney-sweeping by the British population who use chimneys, the annual charge would amount to nearly a million sterling. This sum, large as it is, is probably not over the mark, if we remember, in the metropolis alone, how many houses there are of which every room is inhabited. And how much are we to add as the cost of fuel which is wasted in the formation of all this soot? Various improvements have been made of late in the construction of fire-places in both manufactories and dwellings: notwithstanding, great would be the public benefactor who would provide us with a sure means of economically consuming the chimney-smoke.

In the course of the discussion, Major Parker complained of the charge for sweeping the barrack chimneys, and suggested that the soot should amply repay the cost of sweeping. Sir G. C. Lewis said he was not, however, aware that housekeepers who had their chimneys swept found this a profitable matter. He did not think the charge an extravagant one. There was another item which, if he had been engaged in criticising the estimates, he thought that he should have taken objection to in preference to that of chimney-sweeping. It was 12,600*l.* for emptying cesspools. This is a startling account, after all that we have heard of the improved condition of the dwellings of our soldiers. The reports show an important general improvement in health in consequence of better sanitary arrangements; but here we have evidence of something more being required. If it should be found, on inquiry, that a considerable part of the twelve thousand pounds and upwards has been expended in clearing cesspools connected with the barracks in towns, where proper drainage is possible, no time should be lost in getting rid of these alembics of evil. If the amount so spent were capitalized and properly employed, much good might be done with it.

CLOCK AND WATCH MAKING.

THE BRITISH HOROLOGICAL INSTITUTE.

IT is with great pleasure that we notice from time to time the progress of this institution, which promises to be an important means of enabling us to preserve a valuable branch of industry. For three centuries and upwards this country has been distinguished for the skill of its makers of clocks and watches. For a long time English watches were at a premium in every part of the civilized world. In the reigns of Henry VIII., Queen Elizabeth, Charles I., and Charles II., and up to a comparatively recent date, time-pieces made in this country were chased and in other ways ornamented with a considerable amount of artistic skill. The designs were, also, in many instances, good, and characteristic of the artistic taste of those periods. In the reign of George III. the style of the watches was no less in correspondence with the prevailing taste: they were plain, ugly, and unwieldy; but at the same time they were, in comparison with foreign watches, remarkable for the excellence of their workmanship. As regards the dials of house-clocks, up to the beginning of the present century, they were decorated with engraved brass plates, many of which were of good design and beautiful execution. Thomas and Robert Bewick, John Scott, and other engravers of note devoted time to this kind of work.

At a period when, as regards art manufactures, we were standing still, throughout France and several other countries on the Continent, artistic skill was being highly cultivated, and made a part of general education. As regards this, at a recent meeting in Islington, for the purpose of furthering the establishment of a School of Art and Museum for that district, Mr. Burchett said:—"Go into a French workshop, and there the evidences of the universality of art education were to be found all around. If, for instance, they went into the tapestry department of the great French manufactory of the Gobelins, they would find sketches of all kinds made by the workmen, which would reflect no discredit upon the studio of any artist. It was clear that the men had art at their fingers' ends." The same may be said of several other branches of French industry. To the science of manufactures more attention has also generally been paid by the body of the workmen, than is the case in England.

In Switzerland, by a subdivision of labour, by a taste for elegant design, and partly, it must be confessed, through the comparative cheapness of living in that district, a watch, elegant in appearance, much cheaper, but not so serviceable as an English watch, has been produced, which, in addition to those of French makers, has caused a great depression in the trade of Clerkenwell, Coventry, and elsewhere. We have long ago, and frequently, directed attention to this matter, and endeavoured to show, that unless the clock and watch makers improved in taste, and availed themselves of the means which the advanced state of science suggests, their business would surely depart from them, and go into the hands of others.

It is satisfactory to know that the quality of the chronometers manufactured in England is unrivalled. It is in this country that the chronometer has been brought to its present state of perfection; and in order to preserve this distinction, and in order still further to complete these instruments, a party of earnest and skillful horologers banded together not only for their mutual improvement, but also for the advancement of those who were engaged in the various branches of this business. Through these meetings the Horological Institute became established. Year by year it has advanced, although the increase in the number of members is not so great as might be expected. This circumstance is to be regretted, and is a striking instance of that prejudice or perverseness which, in all branches of manufacture, leads to decay. The foundation of the institute has been, however, firmly laid; and no doubt the rising generation of watchmakers will more extensively avail themselves of its advantages than do the present.

At the annual dinner, at which the Lord Mayor presided, his lordship, in the course of an address of much good feeling and ability, remarked, that in the construction of a watch there was need for perfect exactness—"the very embodiment of truth which is required necessitates the exercise of thought in the mind of the maker, whilst he carries on his mechanical operations. The very name of the maker is suggestive of intelligence—'*horo-logist*'—a maker of machines to mark the hours. It is not merely that watchmakers are men who make wheels and put them together, but they produce the most wonderful and delicate instruments in the world to be exact in their business proceedings. It was an important question, he thought, whether it can be advantageously carried on in England, or whether it is to be given up to foreigners. 1st. The English character requires that watches should be good ones: is it possible to make a very good watch at as small a cost as a watch is made in places where, perhaps, cheapness is considered a more important quality? I am afraid that our national necessity to make a good article will prevent us competing with those makers who regard only price and not quality. I do not know how that difficulty is to be got over. As an Englishman, I should rather say let us maintain our character for a good article; because I believe that in watchmaking, as in everything else, truth is strong and will prevail, and nothing is of so much importance as truthfulness in a watch. The fact of your being able always to depend upon your watch gives value to it far beyond the saving of a few shillings in the cost." While agreeing with the truth of the above in the main, there is no doubt that the price of an article is important; and that, in promoting excellence, we should avail ourselves of the means which are at hand to cheapen several of the preparatory operations in clock and watch making, and also endeavour to introduce a more pure and artistic style in the ornamentation. English watchmakers must move on, or they will be run down.

CEMENT *versus* WOODEN FLOORS.

AT the meeting of the Royal Institute of British Architects, reported in your number of the 8th instant, amongst other matters discussed, is the question of Cement *v.* Wood, as regards floors: the following anecdote will, perhaps, tend to throw the balance of opinion in favour of the latter. At a cotton-mill, where about 3,000 people are employed, one of the young females was about to be discharged on account of continued ill-health. Her reply was, "If you will place me where I could work on a wooden floor instead of on brick, I shall be all right." The master yielded to her request: she recovered her health so decidedly, and he was so struck with the result, that he is having every brick taken up and replaced by wood.

PETER HINCKES BIRD, F.R.C.S.

PROPOSED COMPLETION OF THE BIRMINGHAM AND MIDLAND INSTITUTE.

OUR readers, doubtless, remember the competition for the Birmingham and Midland Institute in 1855. It was a select competition, and the chosen architect was to have no premium, but was to be intrusted with the execution of the work. Mr. E. M. Barry's design was chosen; and half of the building has been erected under his superintendence. Financial difficulties have until now prevented the completion of the work; but the town council at last resolved to finish the building according to the original design. The architect consequently furnished them with designs, full working drawings, and specification. The quantities were taken out, and tenders received. The council have now, however, resolved to throw the whole matter open to competition, and actually invite architects to furnish designs for the completion of the building, according to Mr. Barry's elevation, notwithstand-

ing the promise in the original competition, that the selected architect should have the execution of the whole work. The sole reason avowed by the council is, that they hope to get the building erected for less money by some other architect, the tender having exceeded their expectations. We can hardly suppose that any professional man of repute will respond to an invitation which contemplates a manifest injustice.

THE ART OF DECORATIVE DESIGN.

AN inquiry into the character of the ornamental arts is always attended with difficulty, as it resolves itself into an investigation of the beautiful, and beauty only exists relatively. We may say that beauty is that quality of an object which gratifies or delights the soul of the beholder; but here, at the onset, we are met by an obstacle, as that which gratifies one mind is unwelcome to another, and the form which to one individual is pleasing is to others without comeliness. This diversity of opinion respecting the one thing is not peculiar to decoration, for it has its counterpart in all the æsthetic arts. In music, sounds which to the ear of the savage are grateful, are discordant to the more refined musician; and in respect to taste, that which is palatable to one is nauseous to another. The satisfying, then, may be rude, or it may be chaste: if an object, it may be clumsy in form, or refined in shape, and in colour, gaudy or subdued; and if sound, it may be sweet and tender, or harsh and crude; hence, if beauty is that quality of an object which delights the soul, it is of variable character, and the same form which is beautiful when viewed by one individual, is not beautiful when viewed by another; for in the one case the mind is gratified, and in the other offended.

The taste, like the hand, is susceptible of cultivation. The child who cannot hold the pen, ultimately writes; and with the taste, that which is nauseous to the infant is frequently palatable to the adult; and that which the uncultivated cannot appreciate, the connoisseur greatly relishes. It is so in respect to sounds, and it is so in respect to forms; for shapes and sounds which are unwelcome we learn to admire.

Beauty, then, in the case of the individual, is constantly undergoing a progressive change. It is like the plant which alters its form as it unfolds itself, or the child which is ever undergoing mutation as it develops into man: it changes in the history of every individual who is the subject of cultivation, and passes through many phases in the experience of each; for that which appeared to be beautiful last year does not appear so this year, and that which we cannot now appreciate we may value ere long; yet the constant advancement towards the perfect ideal will not here apply, for our conception of the perfect not only daily alters, but differs in the case of two individuals: hence, it cannot be conceived of, and we cannot be said to be approaching this one goal; nor can it be said of any individual that he now knows what beauty is.

Beauty has also been defined as that which arises from the absence of any want; but here we have a difficulty similar to that which we have already encountered; for where one individual feels no want another sees a deficiency, and that which to one is perfect appears fit only for a part to another; and we know of no definition of beauty which is not associated with like difficulties; indeed, it cannot be otherwise, for the most careful and prolonged consideration only leads us to join Schleiden in thanking God—not because He has made the world and the things that dwell on it beautiful, but because He has placed in man a soul capable of creating to itself beauty, when perceiving the objects with which it is surrounded.

Recognizing the truth that there is no such thing as the perfection of beauty, and taking cognizance of the fact that two individuals may differ in respect to the æsthetic qualities of a form or composition, we yet find that a class of men have existed in nearly all ages who have diligently cultivated that faculty of the mind from which beauty springs in the direction which meditation and reason have dictated; and in the works of these men general principles prevail, and the recognition of common laws is manifested.

These inquiries into the nature of beauty will be of value in respect to our following considerations, for they enable us to see more clearly the extent to which we may go, the nature of the investigation before us, and the conclusions which we may hope to reach. We cannot discover the laws which govern the production of the beautiful abstractedly, nor the road even, which conducts to a knowledge of perfection in form, nor can we refer our opinions to an infallible test for confirmation or refutation; all that we can do is, procure the judgment of those who have devoted long years to such researches, and examine into the practice of ages in which art flourished being nursed in the arms of tenderness.

We inquire, then, into what is necessary in decoration in order to satisfy the cultivated mind; and first it may be remarked, that the ornamental composition, of whatever character it be, must embody the mind of its producer. The most exalted gratification of man rests in the power which his spirit possesses of communing with other spirits: to this faculty of interchanging thought man is indebted for half his knowledge as well as his greatest pleasures; and in the absence of this power the man would be comparatively uneducated, uninformed, unenlightened. This source of exalted pleasure can be embodied in ornament; for the man, while yet dead, may speak through his works. It is the mind which exalts man above all other creatures, and constitutes him a superior being,—it is this which enables him to subdue creatures of greater magnitude and strength than himself. Yes, the mind *is* the man; hence, if mind be absent from his works, the ennobling part is wanting, and they sink in consequence to mere mechanical productions.

Not only must mind be embodied in the ornamental composition, in order that it be satisfying, but the sentiments of the age in which it is created must also be acknowledged. In order that a work of any description gain sympathy, it must in some way personally concern those whose interest it is to awaken, for we can feel but little interest in that which in no way concerns us; and if decorative art is ever to be cherished by the people at large, it must draw forth their affections by embodying their knowledge. It is impossible that ornament do otherwise than engage the attention of the people, if it be a setting forth of the knowledge of the day of its birth; for if any are unjustly represented, they will not delay in expressing their feelings concerning the injury done them. What Englishman likes to see his countrymen represented on the French stage as antiquated individuals robed in blue coats adorned with lustrous brass buttons? The feeling of dissatisfaction at this misrepresentation has even made *Mr. Punch*, if not his dog, protest against such injustice in his recently issued *Almanack*. If every ornament be a representation of some circumstance, or of our knowledge, we may be sure of popular interest; for if one party or theory be unjustly dealt by, its advocates would not be slow to say so, and if the one side were flattered others would find fault. Till ornament does express the sentiments of the age in which it is created, we can never hope that it will receive that constant attention and warm sympathy which it must have in order that it take up and maintain its just position.

In every age in which decorative art has flourished, it has embodied and expressed the sentiments or faith of the people. The Renaissance ornament was an expression of the Renaissance period; and the Mediæval forms, of the faith of the Middle Ages. What could more fitly set forth the Christian faith than the pelican pecking itself till its blood issues forth in order to nourish its young? the passion-flower, the cross, trefoil, quatrefoil, and many other forms, had each a class signification; so that the decorative forms were as mirrors reflecting the faith of the beholder, and they are yet as mirrors which reflect the same image of faith to us, though at a broad angle, as we are far removed by time from the period at which the faith of the Middle Ages prevailed. The Greek ornament, while without symbolic forms, speaks of the refinement which was so diligently sought and successfully attained by the people of the Classic age; and every form in Egyptian decoration had an acknowledged significance, which caused it to speak as clearly-written characters. Ornamental art, where it has flourished, has ever spoken the sentiments, knowledge, or faith of the people who have created it, and must again do so before it will draw to itself that sympathy which is necessary to its due advancement.

This brings us to inquire whether it is possible to express our knowledge in decorative forms. We argue that it is. Yet an expression of religious sentiments in a national system of decoration cannot take place; for, unless there is unanimity of sentiment, there can be no expression of faith. What must find utterance in a national system of ornamentation, is our secular knowledge,—our knowledge of nature, as revealed to us through the sciences, and of refinement; and it is the possibility of expressing this knowledge which we shall endeavour briefly to establish. Some will object that secular knowledge should never be embodied in the decoration of an ecclesiastical edifice, and that we do not admit the embodiment of religious sentiments. No one will more strongly object to a manifest embodiment of secular knowledge in the decoration of a building intended for the purposes of worship, than the writer of this article; yet we cannot approve of the appropriating Mediæval symbols, for the Middle-age faith has passed. We would have "the house of prayer" adorned with little besides the worshippers, as nothing should seduce us from worship while in the temple of the Most High; still we feel strongly that the Creator is worthy of being worshipped in the most exalted edifice which human hands can rear; yet, as He commands that He be worshipped in "spirit and in truth," we would rather, for our own part, not expose ourselves to the possibility of being seduced from true worship by ornaments such as the soul delights in.

While attempting to illustrate the possibility of embodying knowledge in ornamental forms, the author of this article must ask every indulgence, as he is not professionally engaged as an ornamentist, though at special request he has furnished many designs to the manufacturers to be wrought for the forthcoming Exhibition—perhaps as many as any individual; yet, as he has to meet the requirements of an active scientific life, it cannot be expected that he present thoughts clothed in the best garb of decorative forms. He must content himself with giving forth a few ideas for others to clothe in the richness of their knowledge.

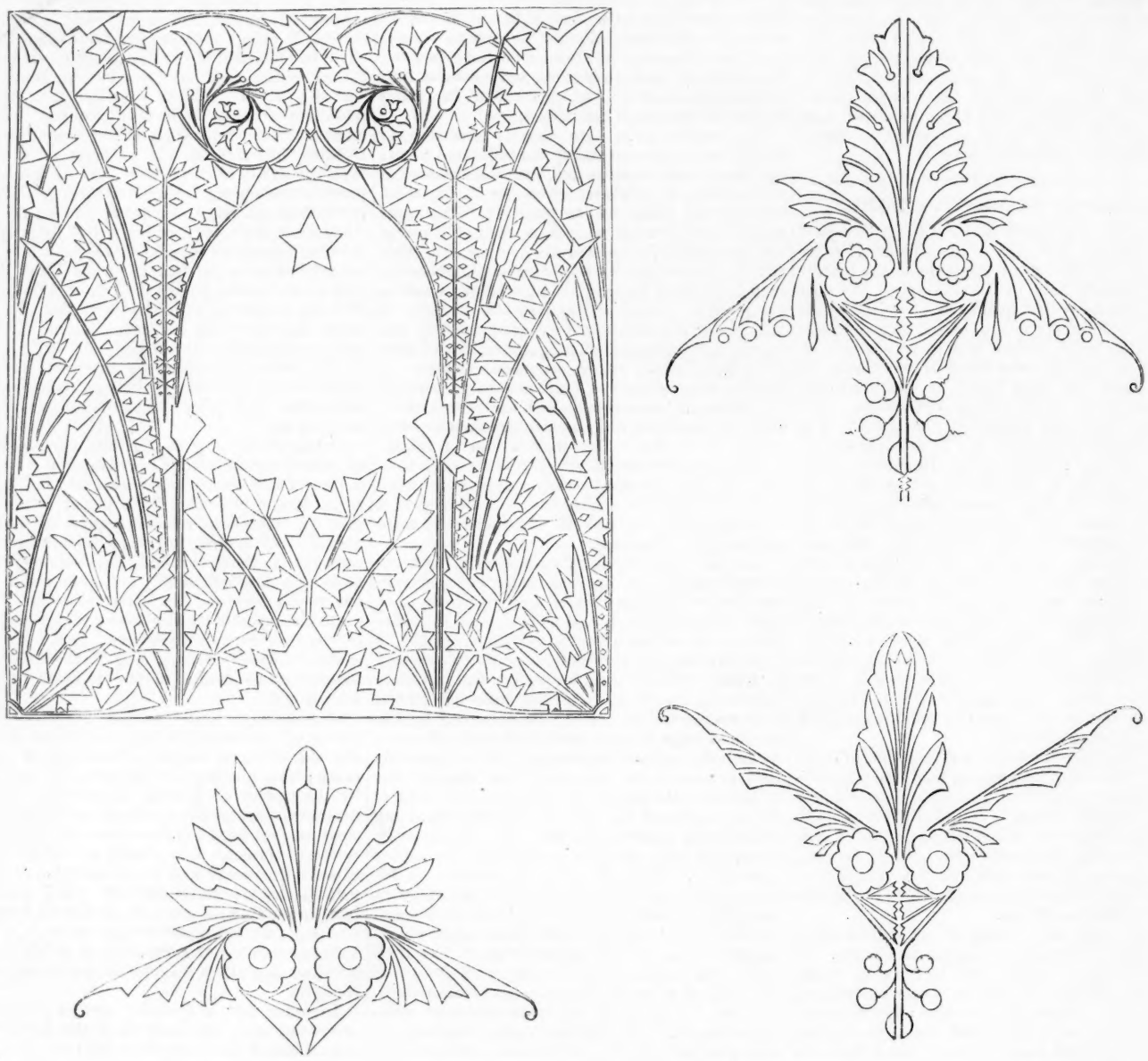
Ornament, we have seen, has long possessed the power of expressing feelings and ideas through the aid of forms having acknowledged significance; but, pleasing as this mode of expression by the agency of symbols is, yet the power of utterance thus afforded is limited. Orange-blossoms may set forth innocence, and call up reminiscences of Hymen's altar; holly and mistletoe will express Christmas and evoke thoughts of merriment and joy; the violet will typify humility, leaf-buds spring; a profusion of flowers, summer; ripe fruits, autumn; and leafless branches, winter. Yet the number of such symbols is few; consequently, they afford no great means of expressing thought.

In order that a symbolic art be powerful in utterance, it is necessary that the people have cognizance of the purport of the forms used, and of the circumstances to which they have reference; for, in the absence of this knowledge, the decoration, through not being understood, ceases to be impressive.

Relative to the desirability of embodying knowledge in ornamental forms, all will be agreed, as we have seen, that such is necessary; yet we cannot hope that symbolism will again prevail, for to it there is the drawback that the significance of the form must be known, in order to an understanding of the ornament: hence the causing decorative forms to express thoughts, feelings, and ideas, without the aid of recognized symbols, becomes of interest.

The most simple agency by which the thought of ascension can be called to mind, is by the arrow with its apex uplifted, and of descension by an arrow inverted (winged arrows will be most expressive); but the ideas evoked by such a use of this simple form are necessarily indefinite. In order that a sense of ascension and descension be more perfectly evoked, a more complicated mode of expression must be adopted, which shall be an embodiment of occurrences or effects associated by the mind with these acts. An umbrella, if moved through the air with considerable velocity in such a manner that the handle follows, will have its web pressed closely against the stick; a bird, when in rapid flight, has its feathers pressed against the body; a parachute during ascent is closed: but should the umbrella be pulled downwards through the air, it will be forced open; a bird when descending has its wings uplifted, and the parachute is open; hence these bodies, when in these particular conditions, will tend to induce the mind to originate to itself the thought of ascension and descension. As an illustration of what is necessary, in order to the awaking the thought of ascension and descension, we give the annexed illustrations, which are of a simple character.

Our next figure is that of a "Hobgoblin," which is said to be a creature with eyes as large as tea-saucers, resident in Padfoot-lane. It will be found that we associate with our conception of evening the existence of creatures with luminous



SUGGESTIVE DECORATION.

or terrific eyes; and insects generally impress by their eyes and wings; for although perfectly familiar with the organs of vision in these creatures, we are frequently altogether ignorant of the character of the mouth; and hobgoblins are associated with evening, hence it is necessary to link them with our conception of this portion of the day, and to make them terrific through the magnitude of the eyes.

In order to the delineation of "subjects" in decorative forms, or, rather, the production of ornamental compositions such as induce the mind to create to itself given thoughts, and call up the desired associations, it is necessary that an accurate knowledge of what has to be accomplished be obtained. If evening has to be induced, the colour of the evening sky must be discovered, which is difficult when a flat-tint is used; and the changes which colours undergo as twilight advances must be carefully observed:—blue becomes lighter, even considerably so; red darkens, and during the period of the later dusk is dark maroon. Yellow is, of all colours, the most stationary under these circumstances. Not only must these things be noted in respect to colour, but the integral parts which go to make up our conception of evening must be ascertained and made use of. Mushrooms, owls, stars, the moon, and large-eyed monsters, all combine to produce the sense of evening; hence their presence, or the presence of conventional forms which suggest them, is desirable, if the intention be that of impressing the mind with the thought of departing day.

We instance these few examples, in order to show the possibility of setting forth thoughts and occurrences in conventional forms. We might select many others from our sketch-books, but space will not permit us so to do. In all cases our illustrations suffer much from the want of colour, yet we hope that they will manifest the possibility of ideas being expressed by conventional forms without the aid of symbols.

C. DRESSER, PH. D.

CHURCH OF ST. JAMES THE LESS, GARDEN-STREET, WESTMINSTER.

THIS church, situate, in the poor district of St. Mary, Tothill-fields, and built at the cost of the daughters of the late Bishop (Monk) of Gloucester, has justly obtained for its architect, Mr. Street, a considerable amount of praise. In our last volume we gave a view of the exterior, the plan, and some particulars.* We now add a view of the interior, looking east.

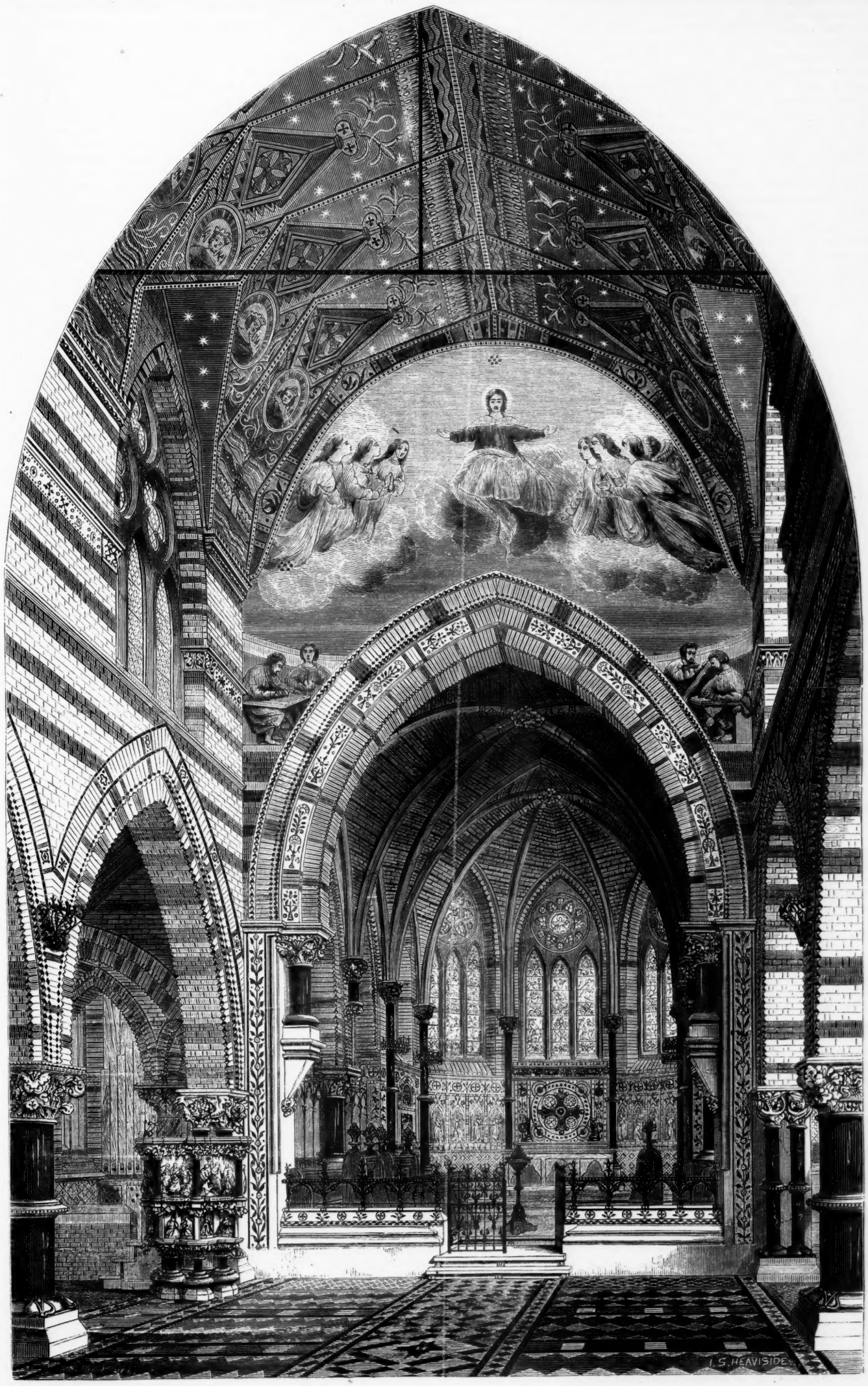
The materials used are mainly red and black bricks, stone, and marble. The apse has windows of three lights, with a rose-window in the head, filled with stained glass, representing types and anti-types of Christ. Between these descend the groining ribs, to rest upon banded shafts of polished marble. The reredos below the line of lights is of white stone, inlaid (with a black composition) with figures of holy women, commencing on the left with Mary the mother of James, then Mary Magdalen, St. Elizabeth and the Virgin Mary; then, on the other side of the reredos proper, come the wife of Manoah, Hannah, Ruth and Sarah. Bands of red and yellow tiles are inserted between these figures, which are represented in niches, dividing them into twos. Immediately over the altar is a cross of vari-coloured Irish marbles, set with studs of Derbyshire spar. Within the apse come the transept aisles; in that on the left is the organ. Two drop arches, on broad shafts of polished granite, with carved caps, and resting on tall plinths (the height of the choir seats), divide these transept aisles from the choir. Each transept aisle is, in itself, divided by a shaft of Bath stone in its centre, whence spring arches to the side piers of the choir. The two shafts which are on each side of the nave are of polished red granite, with bands of Bath stone midway of their heights; the caps are carved, illustrative of the Parables and Miracles.

The fresco over the chancel arch, painted by Mr. G. F. Watts, represents a sitting figure of Our Lord in the centre, with groups of angels on each side, and the four Evangelists below. The pulpit is of stone and marble, and is very richly sculptured. Beneath are sitting figures of the four Evangelists and of the four doctors of the Western Church—St. Augustine, St. Gregory, St. Ambrose, and St. Jerome. The chancel is groined in brick, with stone ribs. The screens and gates round the chancel are of wrought iron and ornamental brasswork. The pavement of the body of the church is formed of Maw's tiles, and that of the chancel has marble inserted. The steps leading to the chancel and altar are of black Isle of Man limestone. The painting of the arched roof of the nave is by Messrs. Clayton & Bell. The subject is the tree or generation of Jesse. The same artists also executed the stained glass.

Messrs. Myers, as we have before said, were the contractors. The pulpit was carved by Mr. Farmer; the capitals, and the rest of the carving, were by Mr. W. Pearce. The organ was built by Mr. Nicholson, of Worcester. The iron screens and gates were by Mr. Leaver, of Maidenhead. The warming apparatus was by Mr. Haden, of Trowbridge. The moulded bricks were made by Mr. Brown, of Surbiton; the altar-plate by Messrs. Hunt & Roskill; and the seats by Wyatt, of Oxford.

The total cost, including fittings and decoration of every kind (all of which were executed from the architect's designs), has been something under 9,000*l.*

* See vol. xix. p. 410.



CHURCH OF ST. JAMES THE LESS, GARDEN STREET, WESTMINSTER.——MR. G. E. STREET, ARCHITECT.

TYPHUS AND TYPHOID FEVERS AND DIPHTHERIA.

DANGER OF STAGNANT POOLS IN RURAL DISTRICTS.

MANY of the ponds situate near farm-houses, and in the centre of villages, often a source of sickness and death, might be done away with, and no inconvenience ensue. In situations where there is no regular supply of water laid on, it may be said they are needed for the watering of cattle, and for other purposes; but, even in these places, in a majority of cases, troughs, communicating with the water sources which supply the ponds, would answer all the purposes required. Besides the damage to health, which is caused by these accumulations of stagnant water, they are but too likely to be hurtful to the horses and cows themselves, who drink it. In many of the pleasant villages which skirt the metropolis, the horse-ponds remain, some of them in a shocking condition: these might be with great advantage filled; horse-troughs properly placed and supplied; and the site of the ponds planted and converted into village-greens. Although the pool at Highgate is not so dirty as others, it may be taken as an example of an old fashion, of unsanitary nature, being allowed to exist after the need for it has ceased.

During the months of January and February of the present year, diphtheria and typhus fever have been more than usually fatal; and, in most of the cases which have been carefully examined, the occurrence of these deadly phases of disease is clearly to be traced to sanitary neglect, even in districts otherwise naturally healthful. A remarkable instance is reported by the registrar-general. In one week four deaths from malignant diphtheria occurred in the sub-district of Lewisham, of which three were in one family, an innkeeper's, at a place called Southend. The local registrar adds, that five deaths have occurred in the same family within a fortnight; and the mother who had suffered such a severe loss informed the registrar that, about two months ago, a part of a large pond, near the house, had been emptied; and that, when the same pond was cleansed about two years ago, typhus raged to a frightful extent in Southend; a hamlet containing 300 persons; and as many as forty in that small population had been affected by it. The condition of this pond should be looked after; for perhaps it may be found that sewage, or other dangerous matter, passes into it.

A proper consideration of collections of stagnant water is worth the most careful notice of the parish and other officers whose duty it is to watch over the public health, not only in the suburbs of the metropolis but throughout the rural districts. Often ponds are formed in disused gravel and clay pits, and are left open from sheer carelessness; although, by a little contrivance, the rubbish necessarily taken from one part might be as well shot into such spots as elsewhere.

Next to sanitary precautions, the hospitals for the treatment of fever may be considered a chief means of rendering less fatal the attacks, and preventing the spread, of the pestilence. Amongst the most valuable of these is the London Fever Hospital, which has for some time past been crowded with patients; and it is with regret that we learn that part of the medical staff and some of the nurses have been stricken. An institution such as this ought to be most liberally supported; but it seems that, owing to the narrow supply of funds, it has been necessary to tax the energies of the limited number who devote themselves to the duties of this hospital beyond their power; and to this may chiefly be attributed the illness of the medical attendants and the nurses. We trust that exertions will be made which will prevent this unsatisfactory state of things from being continued.

Some remarks were made by Dr. Lankester on the causation of typhoid fever, at a recent meeting of the Association of Metropolitan Medical Officers of Health, to which we may briefly refer.

When typhoid fever, he remarked, once established itself in the community, the highest in the land could not be shielded from its deadly influence. If neglected amongst the poor, it failed not to attack the rich. He then gave a sketch of the history of continued fever, and the gradual recognition of the fact that typhoid was a distinct fever, originating in different causes from those of other continued fevers. Although this fact was now very generally recognized amongst persons capable of understanding the philosophical principles of causation; yet there was a difference of opinion, amongst those who had studied the subject most attentively, as to the *nature* of the cause. Dr. Murchison had very properly called attention to the almost constant relation between typhoid fever and foul sewers and drains, and hence had called it pythogenic fever. It had hence been inferred that animal and vegetable refuse, more especially night-soil, had the power of generating an organic poison, which, entering the blood, produced typhoid fever. On the other hand, Dr. William Budd, of Bristol, after a very attentive study of several outbreaks of typhoid fever, had come to the conclusion that the discharges from the bowels, and the discharges from the bowels alone, were the exciting causes of typhoid fever. Taking it for granted that the origin of smallpox was specifically the same under all circumstances, he maintained the same to be true of typhoid fever.

Dr. Lankester appears to adopt the idea referred to, but of which Dr. Budd was by no means the originator. It does appear to be inconceivable, however, why typhoid fever, if it once *originated*, should now be always *communicated* by discharges from the bowels of patients previously affected with typhoid fever, and never *originate anew*, as it once must have done. That bowel discharges of human beings are capable of producing such fever, we could readily admit; and, indeed, this is just equivalent to saying that cesspools, and bad drainage, &c., are its cause; but we do not understand *this* merely to be Dr. Budd and Dr. Lankester's theory. On either view, however, the removal of cesspools and the improvement of drainage are essential to prevention of such fevers.

In examining the theory of the spontaneous origin of typhoid fever, Dr. Lankester drew attention to the fact that many fevers were of malarious origin; and that animal and vegetable substances in a state of decomposition had the power of engendering disease. He pointed out the connexion between putrid states of the air and pyæmia, erysipelas, and puerperal fever. He thought there was not sufficient evidence to show that any of these causes could *produce* a disease which could afterwards be maintained by a poison generated in the body alone. This was the point involved in the question of the causation of typhoid fever. He then invited attention to the question of the predisposition of the individual to take the poison of typhoid fever. He thought the evidence very conclusive that exposure to emanations from decaying night-soil, and the contents of drains and cesspools, *did* produce a state of the system *favourable to* the development of typhoid fever, *when* its poison got access to such persons.

In conclusion, he stated that, whatever might be the view theoretically adopted by medical officers of health, in their action they should employ preventive agencies which would cover the issues of both theories. The excretions from the bowels of typhoid fever patients should be immediately subjected to such disinfecting agents as chlorinated lime and permanganate of soda or potash; and all animal refuse, especially night-soil, should be either removed from human habitations, or reduced to a condition, by charcoal, mould, or other agents, in which those changes cannot go on which give rise to disease.

In regard to typhus fever, there is one remark we would wish to impress upon our readers before concluding this article. It is well known that overcrowding is a leading cause of the occurrence of typhus and other fevers. Now, it is chiefly amongst the poor that overcrowding, in all its horrors, usually occurs; but the influence of overcrowding, in the production of typhus, just means that too many human beings, breathing in too small a space, or in too close an apartment, fail to breathe a sufficiency of fresh air to sustain a healthful vitality in their blood. The re-breathing of already breathed air—whether from one's own lungs or those of his fellows—is not only disgusting in idea, but positively evil in its effects; while the mere want of pure air is only negatively, however powerfully, so. It requires little consideration to perceive, then, that it is not in the haunts of poverty alone that the way for typhus fever is prepared. Wherever human beings reside, and above all, wherever they sleep, in close apartments, however "snug and comfortable,"—or rather, especially where there is such snugness,—there *virtually* exist overcrowding and all its malign influences; even though the apartment be only occupied by one or two persons. Wherever human beings congregate in crowded assemblies, however splendid; or in crowded ball-rooms and theatres, however gay and delightful for the time being; if these places of assembly be not thoroughly well ventilated; there, every one breathes the offensive vapours thrown off the lungs of others as well as his own; and there the nidus of typhus is being prepared and its seeds sown;—in predisposition, at least, to be seized by it on the first opportunity. Draughts are to be avoided certainly; but so is foul air; and foul air may pervade the finest and otherwise the most cleanly of dwellings, and produce all the dangers and evils of the most squalid overcrowding in the closest and vilest of slums throughout a city. This is a question, therefore, which quite as deeply affects the west end, as the east of the metropolis; and perhaps the only counteractive advantage on the one hand is the abundance of the good things of life which sustain the system, while poverty and starvation constitute additional predisposing causes of typhus on the other. The richest provender, however, will never compensate in this case for want of perpetual fresh air; and especially during sleep; for by day doors *will* open and rushes of air *will* come in, even though excluded with the greatest and most foolish care. Food of too rich a character brings with it other evils which sadly diminish its advantages; but of these it is not our purpose at present to treat.

SUGGESTED SITE FOR THE PRINCE CONSORT'S MEMORIAL.

THE suggestion made in our last, by "One of the Mansion House Committee" (we may as well say at once Mr. Charles Hill, F.S.A.), to place the proposed memorial on the site of the Round Pond, Kensington Gardens, the centre of a noble amphitheatre, led up to by numerous splendid avenues, is finding favour with those who have power. A writer, signing himself "Archimedes," has appropriated the idea, and imposed it as his own on our usually wide-awake and all-informed contemporary the *Times*; who has given it the honours of large type and prominence.

PROPOSED ALBERT MEMORIALS.

The National Memorial.—The sum now subscribed amounts to about 40,000*l.* Subscriptions have come in but slowly since the appointment of the Queen's Committee. A much larger sum than what has been yet collected will be required to obtain and erect a monolithic obelisk of such a size and with such sculptured accompaniments as could alone excuse the adoption of that form. Several propositions have reached us as to the shape the national memorial should take; but this having been settled by the letter from her Majesty, it is unnecessary to discuss it. One writer suggests a pyramid of granite, like that of Caius Cestus at Rome. "Appropriate sculpture and statuary could be placed at the angles: the adjacent ground might be laid out in broad walks, with avenues of trees or shrubs, adorned with seats of a fitting form, and protected by a bronze railing. The blocks of granite for construction should be of the largest dimensions compatible with transport; the colour grey in preference to red; or a judicious mixture of both might be allowable. The largest of obelisks would not present so imposing a mass as a pyramid; nor would the expense and labour of one be greater than the other."

Plymouth.—At a public meeting held here, it has been resolved to erect a new Museum in connexion with the local Athenæum, and dedicate it to the memory of the Prince. A committee has accordingly been appointed, and other arrangements made with that view.

Bath.—The committee of the Bath United Hospital have subscribed upwards of 600*l.* towards the fund for the erection of an additional wing to the hospital, as a permanent memorial to Prince Albert, and more than 1,000*l.* has been collected towards the object.

Bridgwater.—The inhabitants of this town have resolved on erecting a town-hall and lecture-rooms, as a local memorial of the Prince, with a suitable inscription in front of the building. The cost will be about 2,000*l.*

Yeovil.—Upwards of 275*l.* of the 300*l.* called for to carry out the local memorial here have already been obtained.

Maidstone.—At a public meeting in Maidstone it has been resolved, in the midst of some difference of opinion as to a local memorial, to aid the central monument; and subscription lists have been opened to carry out this object.

Jedburgh.—An active canvass is going on here, as elsewhere in Scotland, in aid of the Scottish National Memorial.

Dublin.—The Lord Mayor of Dublin wrote a letter to Major-General Grey, with a view to obtain her Majesty's sanction to a suggestion which has met with much approval among the

citizens, that a statue of the Prince Consort should be erected in the Irish capital. In reply, General Grey, on the part of her Majesty, expresses the gratification which the proposal has given her Majesty, who assures them of her heartfelt concurrence in it, and of her best wishes for its successful accomplishment.

Belfast.—A local memorial has been resolved upon here, and a committee has been nominated to receive subscriptions and make all the necessary arrangements. It is contemplated, according to the local *Newsletter*, that the memorial in Belfast shall take the form of a tower or pillar of lofty proportions; and Dr. Cook suggests that it should be erected on the most prominent position in the neighbourhood of the town—the Cave Hill.

COMPETITION.

THE committee for the erection of the proposed new Congregational Chapel and Schools, at Plymouth, have selected the design marked "Utile Dulci," submitted by Messrs. Paull & Ayliffe, of Burnley, under whose superintendence the works are to be carried out forthwith. The second premium has been awarded to Mr. Tarring, of London. Thirty-six designs were sent in.

MACHINE-MADE BRICKS.

THE brick-making machines of Messrs. Henry Clayton & Co., to which we have before now pointed attention, are getting into very general use.

We have received the following report of the testing of some hand-made and machine-made bricks, by hydraulic pressure, recently conducted at the request of the Metropolitan Board of Works—with Messrs. Burton & Co.'s press.

All the bricks were bedded upon a thickness of felt and laid upon an iron "faced plate."

	Pressure to Crack.	Pressure to Crush.
	Tons.	Tons.
Good London "Grey Stocks"	12·00	14·00
The best "Paviours" that could be had	14·00	23·00
Red bricks, not fully burned	13·75	25·05
Red bricks, ordinary quality	13·00	26·25
Three white bricks, made by Clayton & Co.'s patent machinery, at Messrs. Brassey & Co.'s Works	17·05	41·05
Second test—Four white bricks of the same quality, made by Messrs. Clayton & Co.'s patent machinery	16·25	41·00

NOTE.—It is observable that with the machine-made bricks, after the first cracking, a greater weight was required to crush them than with hand-moulded bricks.

TELEGRAPHIC PROGRESS.

MR. CYRUS FIELD is now in England, according to the *Star;* bearing a dispatch from Mr. Seward to Mr. Adams on the important subject of an Atlantic telegraph. Mr. Lincoln's Government is prepared, it is said, to ask Congress to guarantee 2 per cent. upon a capital of 6,000,000*l.* or 7,000,000*l.* for twenty or twenty-five years, if England will do the same. A correspondent of the *Morning Post* describes a new system of telegraphy; suitable, as he urges, for an Atlantic telegraph; inasmuch as it provides relays of power, under water, from space to space, by means of a slow but continuous decomposition of moisture; so that the cable becomes statically charged, and is always so charged, and at any time capable of deflecting the needle in an instant. He calls it a "drinking cable." Retardation, which has hitherto been the chief obstacle in the way of long lines would thus be obviated. Meantime, it has been stated by Messrs. Glass, Elliott, & Co., the telegraphic contractors, that, with two trifling exceptions, which can be immediately repaired, every cable made and laid by them, amounting to 3,577 miles in all, containing 5,918 miles of insulated wire, is at the present moment in perfect working order. The question of a telegraph across the Atlantic seems to be now therefore ripe for solution; and we hope the means for its realization will be forthcoming without delay.——Direct telegraphic communication now exists between London and Constantinople; between which places signals have been sent, and counter-signals given, in a single minute, and messages interchanged with great facility and certainty.——The British Telegraph Company have commenced erecting poles at Swansea, under their Act of Parliament, in order to connect that town with the rest of their system throughout the United Kingdom. This system now comprises upwards of 400 stations, and forms a distinct link between this country and the whole of the north and south of Europe.

PROVINCIAL NEWS.

Windsor.—The plans for the new almshouses (an amalgamation of the various charities of that character) have been furnished by Messrs. Edgington & Tait, of Windsor; and certain building firms of the town and district have been invited to estimate for their erection. The old almshouses in Sheet-street, according to the local *Express*, will be purchased by the War Office; but those in Park-street, Sun-passage, and Peascod-street, will be submitted to public competition.

Colchester.—The committee for forming the new market, having advertised for tenders for draining the ground, constructing oak pens for sheep and pigs, and stands for fat oxen; paving the pens with hard bricks, and the roadways with Kentish rag, and gravelling the remainder of the surface; according to plans and specifications prepared by Mr. James Cooke, civil engineer; received ten tenders, the lowest of which (1,140*l.*), by Mr. Hum, of this town, builder, has been accepted. The tenders were as follows:—

1. Sawyer (London)	£1,953	0 0
2. Parker (Colchester)	1,800	0 0
3. Rayner & Runnacles (Halstead)	1,521	10 0
4. Start (Colchester)	1,513	0 0
5. Hawkins (Monks Eleigh)	1,444	0 0
6. Lee & Baker (Colchester)	1,406	10 0
7. Dobson (Colchester)	1,357	16 0
8. Orrin (Colchester)	1,348	10 0
9. Strickson (Hinxton, Cambs)	1,150	0 0
10. Hum (Colchester)	1,140	0 0

The surveyor's estimate was a little over 1,200*l.* The work will be commenced almost immediately. The levelling of the ground is now nearly completed.

Bellingham.—A new Town Hall has been inaugurated at Bellingham, amid the rejoicings of the inhabitants of that district of North Tyne.

SCHOOL-BUILDING NEWS.

East Donyland (near Colchester).—The foundation-stone of a new parochial school has been laid in this village. The school was designed, and will be built, by Mr. Grimes, of Colchester. It will consist of a school-room 40 feet by 18 feet, and a class-room 10 feet by 13 feet, with a gallery: they will be paved with wood blocks; and the roof will be open, with cross ties. The exterior design is Gothic; the principal material being red brick, with stone weatherings; and the mullions of the windows will be of white squint bricks (in lieu of stone) grooved to receive rough plate-glass in large squares. The cost of the building is estimated at about 450*l.*

Yeovil.—The foundation-stone of infant and Sunday new schools has been laid at Yeovil. The site chosen for the building is in South-street, distant about 200 yards from the Trinity Church. The edifice was designed by Mr. C. Benson, and will be built in the Early English style—corresponding with the architecture of Trinity Church. It will consist of a school-room, 76 feet by 30 feet, which will be capable of accommodating 300 infant week-day scholars; a class-room 18 feet by 13 feet; a cloak-room, lobby, &c. Under the school-room there is to be a play-ground built, for the children in wet weather, and there will be a large yard behind. A dwelling-house for the mistress of the school is likewise to be built; and altogether the erection will cost 1,400*l.* Mr. Chant is the builder.

CHURCH-BUILDING NEWS.

Dun's Tew (near Banbury).—The parish church of Dun's Tew has been opened for Divine service. The expenses of the repairs and renovations, which are not far short of 2,000*l.*, have been borne by Sir H. W. Dashwood. The farmers, however, conveyed the stones and other materials. The church is in the early English style of architecture, and nearly the whole of the body and chancel have been rebuilt. The arcade has been restored, retaining the old pillars, and a portion of the old screen separating the chancel from the chantry has also been retained. The roof and seats are new, the latter open and in keeping with the remainder of the edifice. The singing gallery, formerly over the west entrance, has been pulled down, and a space of about 5 feet additional has been obtained in width at the north side of the church. The pulpit, altar rails, and cloth and other fittings, are new, including the cover of the font. An old piscina at the east end, formerly embedded in the wall, has been brought out. Two of the windows are entirely new, and others have been restored, Messrs. Peyton and Bell supplying the stained glass part of them. At the entrance of the chancel are on either side busts of her Majesty and the Bishop. The heating apparatus was manufactured by Haden, of Trowbridge. The church will now accommodate 328 persons, including the school children. Mr. Scott, of London, was the architect employed.

Winchester.—Workmen have been employed, under the direction of Mr. John Colson, the architect to the dean and chapter, in excavating the ground at the west end of the cathedral, with a view of ascertaining how far the ground may be lowered without interfering with the remains of the ancient building. During the excavations the workmen have discovered foundations of enormous thickness, indicating that either the Saxons or Normans have extended another bay westward, or that there were once two large towers at the end of this building. It is said to be the intention of the dean and chapter to form a carriage way from Market-street to the western entrance of the cathedral, and to protect the three porches with an ornamental iron railing on two steps, running the whole width of the west front: the passage at the south-west angle is also to be widened, and the modern walls removed so as to expose the massive ruins in the adjoining garden.

Collingbourne Kingston (Wilts).—On the 18th ult. the parish church here was reopened, after having been closed for seven months in order to undergo a much-needed renovation. A sum (including the value of old material, estimated at 200*l.*) considerably exceeding 1,500*l.* has been expended on the restoration. Mr. John Colson was the architect employed. The Norman arcade, of the eleventh century, by the removal of the high and irregular pews by which it was surrounded, has been brought out, and the thick stone pillars have been restored. The chancel arch has assumed its former proportions, and light Purbeck marble shafts, supporting foliated capitals, introduced by the vicar at the suggestion of Mr. Colson, have been added. An unsightly gallery, obtruding on the arches of the arcade, has been removed; and the belfry floor has been converted into a baptistry, the Marquis of Ailesbury having given 100*l.* for this purpose. A ringing-loft has been constructed above the western window and tower arch, to which there is access by a door cut through the tower wall, from the outside. There is a new font and a carved screen, worked from the drawings of Mr. Colson, and both bearing appropriate Scriptural inscriptions. The chancel, which is in the hands of appropriators, unfortunately has not participated in the restoration.

Blockley (Worcestershire).—The stone-moulded arches in the parish church have been freed from colour and whitewash.

Cheltenham.—The church lately erected in the new suburb of St. Mark's, Cheltenham, has been consecrated. It is designed to accommodate 517 persons, 267 free. It is in the pointed style of the fourteenth century, and consists of a chancel, nave, and tower; though the latter, owing to a want of funds, has not yet been erected. The chancel is 33 feet by 20 feet; the nave 74 feet by 44 feet, and 48 feet in height. The roofs are open, and the timbers stained. The seats are open, uniform, and lightly varnished. The architect was Mr. J. Middleton, who has given his services gratuitously.

Chester.—The raising of the tower of St. Mary's Church is now finished, as far as the masonry work is concerned. Mr. James Harrison was the architect, and Mr. Hitchen the contractor. The total expenditure on the improvements and restorations will exceed 1,600*l.*

STAINED GLASS.

Welsh Newton and Dixton Churches, near Monmouth.—A stained-glass window has just been placed in the east end of the parish church of Welsh Newton. It was presented by Mrs. Catherine Marriott, of the Callow Hill, and consists of two lights, with a large circle in the head. In the lower lights is represented the baptism of our Lord by water, together with that other "baptism" that He had "to be baptized with,"—the agony in the garden, &c. In the circle is a representation of the passage of the Israelites through the Red Sea, as the type of baptism. The window was executed by Messrs. Powell, of Whitefriars, Fleet-street, from cartoons by Mr. Richard Holmes, from the design of Messrs. Prichard & Seddon, the diocesan architects for Llandaff.——A stained-glass window, of two lights and quatrefoil above, was also lately placed in the parish church of Dixton, near Monmouth, at the cost of Mr. J. E. Powles, of Monmouth, from the designs and cartoons of the same architects, executed by Messrs. Lavers & Barraud. The subjects represented were the miracles of healing the son of the widow of Nain, and the

daughter of Jairus; and in the quatrefoil a jewelled cross, surrounded by the passion-flower, on a grisaille ground.

Lilleshall Church (*Newport, Wales*).—A window of stained glass, designed and executed by Mr. O'Connor, of London, has just been placed in the parish church of Lilleshall, near Newport, by the vicar and other inhabitants, in memory of the late Duke of Sutherland. The window itself is an Early Decorated one, with two lights, belonging to the north aisle of the church, built about A.D. 1320, and restored in 1856, under the direction of Mr. Norton, the architect. There are six subjects, represented in six medallions,—three in each light. They are intended as illustrations of six out of the seven Beatitudes recorded in the Gospel according to St. Matthew, v. 3-8, and have reference to our Lord's life on earth, or to His teaching by parables. Thus the parable of the Pharisee and Publican illustrates the Poor in Spirit; the parable of the Good Samaritan—the Blessedness of the Merciful; our Lord washing His disciples' feet—the Blessedness of the Meek; the child placed by our Lord in the midst of His disciples—the Blessedness of the Pure in Heart. The two upper medallions represent—the one Martha and Mary at the tomb of Lazarus, illustrating the passage, "Blessed are they that mourn;" and the other, our Lord talking to the woman of Samaria of the living water, which He was come to give to those who hunger and thirst after righteousness. Another memorial to the late Duke of Sutherland, in St. George's (a district partly taken out of the parish of Lilleshall), is also hastening towards completion,—the memorial church designed by Mr. Street, architect.

THE EXHIBITION ROAD ACROSS HYDE PARK.

MR. COWPER, last week, submitted in committee an estimate, amounting to 2,000*l.*, for a temporary road in Hyde Park. The proposed line of road would enter Hyde Park at Bayswater, through the Victoria Gate, and make use of the existing carriage-road until it approached the bridge over the Serpentine. Then carriages would be enabled to proceed over that portion of the bridge which was at present exclusively confined to the use of riders, and along the south side until they reached Rotten-row. There they would take less than one-half the road, passing to the west down Queen's-gate. There they would leave the park, and proceed to the Exhibition building down Prince Albert's-road. The road would be 35 feet wide, excepting at the bridge, where 30 feet might be sufficient. They would take 30 feet for the carriages, and 17 feet would be left for the foot-passengers. The whole distance was more than half a mile,—about 1,100 yards, with a width of 35 feet; and the cost, at 3s. 3d. per square yard, would make the sum of 2,000*l.* It was proposed that the road should be open to all carriages employed to convey passengers to the Exhibition. They proposed that hack cabs and omnibuses should have free use of this road. It would not be open to carts or waggons, but it would be open to any human beings proceeding in vehicles to the Exhibition. The riders on Rotten-row would not suffer much inconvenience from the proposed road. After some discussion, the vote was agreed to by a majority of 78 to 28.

THE ROYAL ENGINEERS.

SIR,—A subject which for a very long period has been agitating many minds is the present constitution of the Royal Engineer Department; and, although you observed, in noticing some pamphlets lately published, "into the merits of the subject we need not at present re-enter," I trust you will afford me space for the following view of the matter, which has been almost lost sight of in "the incompetency of the military officers," and "the injustice to the civil officers" of that department.

The country pays for each engineer officer up to the time of leaving Chatham, when merging from youth to manhood, not less than from 400*l.* to 450*l.*

Admitting, as was stated by "Not a Sapper," in the *Army and Navy Gazette* of 22nd ultimo, that officers of engineers are "the élite of the educated youth of England;" assuming also that they have genius and abilities above other men; three years is the shortest period in which one can acquaint himself, in even a superficial manner, with the professions of architect, surveyor, and civil engineer; as, up to this time, he has had but "less than a month for a course in practical architecture," including surveying and civil engineering. During these three years he will have received in pay and allowances not less than 600*l.*; which, added to the 400*l.* or 450*l.* before alluded to, gives us 1,000*l* as the cost of one; and, taking the present number of officers at 382, we find that they have cost the country, at a low computation, 382,000*l.* Let us now see what is given in return.

If barracks are required fit to be seen and occupied, designs are procured from Mr. Morgan (for Chelsea), Mr. Salvin (for Dover), and Messrs. Wyatt (for Nottingham).

If the foundations for a fort have to be built in the water or at Spithead, Mr. Hawkshaw, C.E., is engaged.

If a church is to be built at Aldershott, Mr. Hardwick is selected to design and carry out the same.

If a system of water-supply or drainage for a camp be required, Messrs. Simpson and Bazalgette are intrusted therewith.

If an innovation on the old and absolute theory of fortifications be suggested, who makes the suggestion? or if any criticisms on our land fortifications remain unanswered, whose are they: Mr. Fergusson, the architect, can tell us.

And at last, for fear of asking too many such questions, when a monumental arch is to be erected in memory of officers and men of the corps of Royal Engineers who fell in the Crimea, who furnishes the design and carries it into execution? Mr. Digby Wyatt.

With such instances of what the corps' officers can or cannot do, I come to the conclusion that we pay them, and get little or nothing in return; and I ask myself if it be not possible for the Secretary of State for War to obtain real architects and real engineers without paying for their education? whether admission into the Royal Engineers (if the officers are to be continued in civil appointments as at present) should not be by public competition open to the whole country, with the candidates educated at their own or their friends' expense? If so, then I call on every professional man in the country to make a stir, and contribute his share of exertions towards rooting out what is now a scandal and abomination in the land, and concerning which the worst has not yet been said.

MINUTE GUN.

Books Received.

A Manual of Civil Engineering. By WILLIAM JOHN MACQUORN RANKINE, C.E., LL.D. &c. Regius Professor of Civil Engineering and Mechanics in the University of Glasgow. London: Griffin, Bohn, & Co. 1862.

As if answering some who have asked where are the confines of civil engineering, Professor Rankine says,—"With the exception of harbours, most great engineering works are long lines of communication, such as railways, roads, and canals;" nevertheless, in his manual he includes the science of hydrostatics, of hydraulics; observations upon the direction, velocity, and height of waves; inquiries upon the influence of soil and climate upon the growth of trees; notes upon the structural character and chemical constituents of stone; processes of preserving stone; notes on diving-apparatus, on masonry, artificial stones, cementing materials, brickwork, and earthwork; on carpentry; on metallic structures; modes of reducing drawings by photography, by pantographs, by eidographs; modes of engraving and lithographing; modes of supplying towns with water, of laying down sewerage; of perfecting drainage, fencing, paving; processes of reclaiming land; methods of constructing coast defences, deep-water basins, scouring-basins and docks, piers, quays, lighthouses, breakwaters, reservoirs, wells, pumping-works, canal-aqueducts, canal-locks, canalized rivers; notes on astronomical refraction; methods of forming underground and submerged structures—shafts or pits, drifts, mines, or headings, tunnels in dry fissured rock, tunnels in soft materials, tunnels in mud, tunnel fronts; foundations on iron platforms, on short piles, on bearing screw and sheet piles; methods of excavating under water, of dredging and blasting;—notes upon lead, zinc, tin, alloys of tin, copper, bronze, brass, gold, auriferous steel; on the strength, resilience, rigidity, elasticity, compressibility of various materials. On all these subjects the best authorities have been consulted with due acknowledgments, and, where permitting of it, mention is made of the most recent inventions and discoveries.

The best, or the worst, of such a compact compression of the science of engineering as this is, seems to be that it tends to the easy acquisition of a great deal of showy information which might pass current for better-grounded study. Thus the perusal or consultation of this Manual of Engineering would answer all the purposes of "cramming," previous to an examination: that is to say, a great deal might be learned from it with very little effort. This comprehensiveness, a gain in some respects, is a drawback in others; for a student who has mastered the Alpha of Engineering Geodesy, and is wading towards Omega, through calculations of strain, stress, and strength, would weary of the printed companionship of early acquired facts,—cut and dried, and packed away in the smallest possible space though they be. How far round the cycle of study herein condensed would a man care to carry tht information, that "when a tracing has been made on thin paper, other copies can be made on thick paper, by rubbing the lower side of the tracing with black lead, or putting a sheet of black-leaded paper below it, laying it on the thick paper, and passing a smooth-pointed instrument all along the outlines of the tracing?" Thus, by endeavouring to include everything, much is included that will be absolutely burdensome after a student has made a fair start: on the other hand there is no doubt but that the professor has called in both French and German, as well as English fields, a large amount of information, and garnered up useful hints, to facilitate operations that will be serviceable to many. As an instance of this, among minor matters, those who have experienced the inconvenience of finding their paper curl up when out surveying or sketching, will be glad to learn a simple mode of obviating the difficulty:—"To protect the paper against the effects of the alternate moisture and dryness of the air, Captain Siborn recommends that its lower side should have spread over it the beat-up white of an egg before it is laid on the board."

The first part of the Manual very properly relates to surveying and setting out of works, comprehended in the term engineering geodesy, or field-work. Under this head we find six chapters detailing methods in surveying with chain and arrows, the use of offset and cross staffs and platometers, surveying by angular measurements with the use of the theodolite and the sextant; of levelling by the barometer, thermometer, spirit and water levels; of setting out. So long a list of authorities is appended to this section of the work that we should quite lose sight of the professor if it were not for a claim he advances to the authorship of the method of setting out circular curves by angles at the circumference. By this method circular curves can be set out as quickly and accurately as straight lines. "It depends on the well-known principle that the angle subtended by any arc of a circle at any point in the circumference of the same circle, is one-half of the angle subtended by the same arc at the centre of the circle." Our author adds in a note that methods of setting out curves by the theodolite had previously been employed by Captain Vetch and Mr. Gravatt, but they have never to his knowledge been published. His own method of setting out curves was published for the first time in a paper read to the Institution of Civil Engineers in 1843.

The second part of the work is divided into six chapters and subdivided into twenty-seven sections, and treats of materials and structures—their stability and strength. It contains a summary of the principles of the balance of single forces and couples—the resultant and balance of forces acting in one straight line, resultant of two and balance of three inclined forces, resolution of a force, &c.—examples of weights and centres of gravity, a classification of strain, stress, strength, working load and fracture, examples of the action of a transverse load on a beam—shearing stress and bending moment, determination of the resilience of beams, resistance of beams to cross breaking and crushing by cross breaking, &c. &c., all condensed as by some hydraulic process, and arranged in the regular order due to subjects so nearly allied to machinery.

Dwelling upon the durability of stone, experience is cited as the only sure test of this; and a recommendation is given to examine other buildings formed with the same stone before using it, more especially those of an old date. This is all very well; but suppose the works requiring the stone are in a new country—California or British Columbia for instance—where there are no buildings of some centuries standing: what is to be done then? The strength of stone can be tested by experiment, but the question of its durability is a problem that hitherto time only has been able to solve. Part of the secret of durability consists in rejecting bad stone at the quarry mouth. Contractors sometimes regard too highly the cost of quarrying indifferent stone to get at the better; and, to prevent what they consider waste, cart both away together and use them indiscriminately. Masons prefer a stone that will work well to a stone that will last well. The oolite, of which some of the Oxford colleges are built, is crumbling away; while that of which Christ Church Cathedral, in the same city, is built is in good preservation. The stone of which the Houses of Parliament are built is decaying in patches; while that of the Geological Museum, in Jermyn-street, taken from the same quarry, is at present tolerably sound.

Civil engineering, even as presented in a manual, is not without a picturesque aspect. Who can read of felling timber, cedar for instance, without a thought of the Druse villages of the Lebanon; or of the white and yellow pines, the black and red larches, without conjuring a fragrance upon the page as of a mighty Canadian forest? The mention of the patriarchal age at which oak should be felled suggests a green and golden glade strewed with leaves and acorns. "Oak comes to maturity at the age of a hundred years;" so five

generations of merry children may grope in its flickering shadow for fairies' cups; and five generations of blooming maidens keep tryst beneath its gnarled branches, before it is ready for the axe; for "it should not be felled before the sixtieth year of its age, nor later than the two-hundredth."

Iron enters largely into most engineering operations. It is, therefore, a matter of moment that its qualities should be well understood. We have recently all heard, in the inquiry upon the cause of the fearful calamity at the New Hartley colliery pit mouth, that a hollow space was found in the beam near the fracture. These air bubbles are of frequent formation, and can only be detected by ringing with a hammer: they should be carefully sought, as castings containing these are always unsafe. But it is ascertained that iron is liable to a change in its qualities: under some circumstances it will lose its fibrous structure and toughness, and become crystalline and brittle. This is still open ground for inquiry and experiment, for there is much diversity of opinion on the subject. It is believed that a sudden shock will have this effect: some persons go further, and think the vibration of ordinary wear has the same results; others again discredit the fact of any such change. The mention of this will bring to mind—referring again to the Hartley accident—that the beam there had received a sudden shock about a month previously, which shock may have wrought some such change. The Professor has made some inquiries on this score. Some time ago he made a collection of several journals of railway-carriage axles which, after two or three years of wear and tear, had broken spontaneously, by the gradual creeping inwards of an invisible crack at the shoulder. He found the fracture in each case to be fibrous, or almost wholly so, while other axles from the same works, when broken by the hammer "showed some a fibrous and others a crystalline fracture." Professor Rankine's own opinion is that iron should be as little as possible exposed to sharp blows and rattling vibrations. How far the wreck after wreck of the noble Hull iron steamships may be attributed to this liability upon the part of iron to become brittle is a question that might be gone into. A jar against a rock; the continuous vibration kept up in a storm by the force of the waves; or a collision with an iceberg, might be thus attended with deferred and hidden danger, if not with immediate fatal results.

There is another point we should like to have seen judiciously handled in that part of the work relating to metallic structures. It is, faulty construction which has been attended with fatal results; side by side with suggestions of what was required in each case to have prevented accident. Take the numerous casualties that have befallen the public from the faulty construction of suspension-bridges, both on the Continent and at home. A collection of facts—engineering facts,—such as the strength furnished and the force which demolished the fabric,—would constitute a table that would, perhaps, save risk to innumerable lives in times to come. Call to mind the terrible accident at Yarmouth; when the suspension-bridge, crammed with sight-seers watching a clown sail down the river in a tub drawn by geese, gave way, and the crowd was precipitated into the river. Or the case of the bridge of the Basse Maine, at Angers; when, just as several hundreds of soldiers were crossing it in close column, the suspending rods first gave way on one side and then on the other, and the whole floor of the bridge fell; carrying with it the troops; a greater portion of whom were either pierced through with the bayonets, or wounded with the guns of of their comrades, or drowned: how impressive to the student would be the calculation that could show the causes of these calamities. Or the case of the fracture of Balloch Bridge, near Loch Lomond, caused by the pattering of a flock of sheep over it. Or, again in France, when the suspension bridge over the Lot broke down as it was being repaired, and several men were severely injured and others were drowned. The faulty construction of French suspension bridges is admitted; and the failures of our own railway bridges are of sufficiently frequent recurrence to afford data.

The third portion of the work relates to combined structures,—lines of land carriage—such as roads, tramways; railways; works for the collection, conveyance, and distribution of water; works of inland navigation; and tidal and coast works In the chapter on roads, after describing the various kinds of macadam under the head of broken-stone roads, our author says, "When mud forms on the centre of a road, it is to be removed by scraping; but, if the road be well made, of good materials, little of that work is required." The consequences of traffic do not appear to be here taken into consideration. In the metropolis, where these roads are formed of the best materials in the best manner, there is yet plenty of scraping required. In London, as at Newcastle, the authorities are beginning to discover from experience that syenite and granite road-paving are at once cleaner, more durable, and, in the end, cheaper than macadam. Rubble or boulder pavement, consisting of stones of irregular shapes set in a bed of sand or gravel, causes "great resistance to vehicles, is liable to irregular sinking, and requires frequent repair." To this we would add that observations of the effect of this pavement in towns show that whereas liquid slush of every kind is absorbed in the interstices in wintry seasons, it lies in countless sweltering pools in summer. The section relating to systems of drainage is too brief.

Equally sparse in their treatment are the chapters devoted to those very important branches of civil engineering—the system of water supply and works of inland navigation. Ten pages are considered ample for discussing the various details relating to the former,—irrigation, water supply of towns, storage works, springs, compensation waters, river works and pumping establishments, wells, purity of water, settling and filtration, distributing basins, town reservoirs, and distributing pipes; and twelve pages, sufficient for the latter, are devoted to the study of the form, dimensions, and construction of canals, canal aqueducts, bridges, and tunnels, moveable bridges, canal-locks, and water supply of canals.

Page 753 brings us to the sections on waves and tides, coast defences, tidal channels and harbours, including, in reference to the latter section of the work, brief mentions—all in one page—of quays, piers, deep-water basins, and docks: this is followed by an appendix of tables of strength of materials, of British and French measures, of heaviness and specific gravity, and of squares and fifth powers of numbers. Page 777 gives us the Index.

It is in the departments last named that engineering has made the greatest strides. The new docks, both in England and France, would be wonders in any age: the rail has revolutionized commerce and transit: the waterworks of Glasgow rival those of the ancient world: the new tubular bridges have no precedent; but, in mining operations, engineering has made no corresponding progress. The cost of mining causes the price of the material excavated to be (according to the difficulties encountered) from five to twenty times that of the same quantity in the open air. To reduce this excessive cost, and, at the same time, to insure safety for the workmen, are problems at which the present generation and those to come may labour with profit.

The Manual is illustrated with views of the more important modern engineering works, such as the bridge over the Niagara Falls, the Britannia Bridge, the Crumlin Viaduct, Portage Bridge, over the Genesee river, and the Victoria Bridge, over the St. Lawrence; and it has a profusion of diagrams. The paper of our copy seems to mark the transition period between duty and no duty, as it is of two kinds, probably old stock and new—yellow and white.

Engineering is indebted especially to machinery for its rapid development,—a debt Professor Rankine only acknowledges by two impresses of a portrait of Watt on the outer covers of the Manual; for, coming to the last of his well-stored pages, we find he has made no mention, by description or diagram, of that magician of motive power—the steam-engine.

Miscellanea.

HULL TOWN HALL COMPETITION.—We are informed that the town council of Hull have awarded an extra premium of 25*l.* to the design by Messrs. Green & De Ville, for their new town hall, in consequence of Mr. Tite's favourable report upon it. The design was placed third.

THE MERSEY DOCKS AND HARBOUR BILL.—It has been determined by the Mersey Docks and Harbour Board to withdraw for the present the bill which they had deposited before Parliament, for the purpose of obtaining powers to raise and expend 1,000,000*l.* for the extension of graving-dock and other accommodation at the north and south extremities of the port. This resolution has been adopted in deference to the representations of the steamship owners.

CARLISLE NEW BRIDGE COMPETITION.—Several correspondents complain that they can obtain no information in reply to letters sent in compliance with an advertisement.

GAS IN CORSICA.—The Corsican and Mediterranean Gas Company has recently published their prospectus. They propose to supply Bastia and Ajaccio, the two chief towns of the island, with gas, and have obtained exclusive privileges from the municipalities for fifty years. At Bastia, which contains 20,000 inhabitants, the price stipulated to be paid for the street lamps is at the rate of 2·25 dollars per 1,000 cubic feet consumed. The price of gas to be consumed in the public offices and municipal buildings is at the rate of 2·75 dollars, and that for the general public at 3·38 dollars per 1,000 cubic feet. At Ajaccio, which is the capital of Corsica, and has about 16,000 inhabitants, the terms of concession are of the same character as at Bastia, while the prices are a trifle higher, and will remain so till the consumption equals that of Bastia.

NEW MACHINERY FOR DRESSING SLATES.—This invention, by Charles Edward Amos, of the Grove, Southwark, and John Francis, of Penrhynn, North Wales, consists, as described and illustrated by cuts in the *Engineer*, of a rectangular frame, which may be mounted on wheels. This frame is provided with a fixed knife, and also suitable bearings for a lever or "sword arm," which carries a moveable knife. The "sword arm" or lever is suspended by a spring or springs, so that when in a normal position the moveable cutting edge is raised above the lower knife edge, and the two edges resemble a pair of open "shears," and act in the same manner. A treadle-frame is attached by means of a link to a lever, which is upon the same spindle as the "sword arm," and the knife edges are brought together by the pressure of the foot of the workman; or, if desired, the machine may be worked by mechanical power, by applying power to the treadle-lever, or the treadle-lever may be dispensed with and the power may be applied direct to the "sword arm." The spindle of the "sword arm" is made adjustable to compensate for wear in the cutting edge and other working parts; and a gauge-plate with suitable marks or points corresponding to the different recognized sizes of roofing slates is placed on the framework; so that the rough slates may be laid in their proper places and adjusted with facility. If desired, a double set of shears or cutting edges may be employed, so that two sides of the slate may be cut, trimmed, or dressed at the same time; but this will not be found a convenient arrangement in practice.

SANITARY CONDITION OF NEW YORK.—The last yearly report of Mr. Delavan, the city inspector, has been laid before the common council of New York. The *American Gas-Light Journal* of 1st February contains a summary of it, to which we are indebted for the following quotations and particulars. The report says,—"Among the causes which have induced the increased mortality of the present over that of former years, may be cited the density of our population, the crowded condition of our buildings, and the want of proper arrangements to secure ventilation. In the upper part of the city, where the population is rapidly increasing, the fatal effects arising from the miasma of sunken and unfilled lots, from the pools of stagnant water with which many of them are filled, are to be seen in the records of our annual mortality." As to tenement houses, it is said: "An estimate has been made which places us in possession of the information that the mortality of those occupying these abodes, including infants and children, is as one to twenty. There seems to be no doubt of the correctness of this estimate; or, if there be any error, it is that the proportion of deaths is larger than herein described..... Such are the imperfections for the admission of light and ventilation, that in some places the sun is almost entirely excluded, and the air finds admission only from the doorway or the narrow passages leading to the rooms." In reference to sewerage and drainage, the proportion of deaths in the upper part of the city, east of Sixth avenue, has been greater, population considered, than in many other sections of the city. The cause of this disproportionate fatality, the report states, is directly traceable to the low and marshy grounds, and the want of an efficient system of sewerage and drainage to relieve the pools of their stagnant water. Another cause of unhealthiness proceeds from the unceasing work of tearing up sewers recently constructed, for repairs or rebuilding. And in addition to this, the custom is practised in too many instances of paving streets and avenues before they have been sewered.

RESIGNATION OF THE BATH CITY ARCHITECT. Mr. George P. Manners has resigned his office of City Architect at Bath on account of ill health. He had held it for thirty-nine years. The council unanimously expressed their regret for the loss of Mr. Manners's valuable services.

PREVENTION OF LARGE FIRES IN WAREHOUSES.—A new company is being established, called the London Sufferance Wharf Company, the principal design of which is to secure the preservation and safety of all goods deposited, by classification and separated arrangement. It is proposed to erect, on approved principles, a series of detached warehouses, on a site consisting of 26 acres of land, on the north bank of the Thames, near Blackwall, having a frontage to the river of 1,000 feet, and within half an hour's ride of the City, of which plans have been prepared by Messrs. Wadmore & Baker, architects.

CHARGES FOR STREET-WATERING. — At the Clerkenwell police-court a case has just been heard from which it appears that the New River Company agreed with the vestry of Clerkenwell to supply them with water, for the purpose of cleansing and watering the streets. They could not agree upon the price, the New River Company charging 239*l.* 17s., whilst the vestry contended that they were only liable to pay 6d. for every 1,000 gallons of water. Mr. D'Eyncourt said: The only question in this case is whether the 41st section of the 15th and 16th Vict., cap. 160 (the New River Company's Act, 1852) regulates the charge to be made for supplying water for watering the streets, and excludes the operation of the 37th section of 10 and 11 Vict., cap. 17 (the Waterworks Clauses Act, 1847). I am of opinion that the matter in dispute is not within the 41st section of the company's Act, but comes under the 37th section of the Waterworks Clauses Act. That the case of watering the streets is not expressly excepted by the 41st section is obvious; neither, in my opinion, are the terms of that section so clear as to show any intention to exclude the operation of the 37th section of the Waterworks Clauses Act, which would otherwise govern the matter. Mr. Poland still asked the magistrate to fix the amount that was to be paid, but declined to produce any evidence. Mr. D'Eyncourt said evidence ought to be produced, and dismissed the summons for want of it.

HANLEY SCHOOL OF ART.—The annual meeting of this School has just been held, and the prizes distributed. The Mayor of Hanley was in the chair, supported by Mr. Copeland, M.P., and a large number of influential gentlemen interested in the welfare of the School. The body of the town hall and the gallery were also crowded. The report which was read stated that "the high state of proficiency at which the School has arrived is best seen in the fact that twelve works of the students were sent up to the national competition, and that the School has for the fourth time secured the highest number of awards which can be obtained; viz, five national medallions, as well as two honourable mentions." The report further stated that the committee had concluded the purchase of the school premises. The purchase had entailed a heavy money responsibility, and the treasurer was consequently considerably in advance (about 70*l.*). In seconding one of the usual resolutions, Mr. F. Bishop showed, from statistics laid before Parliament last year, that Hanley School stood pre-eminent. There were 70 schools, more than half of which, in 1860, did not obtain one medallion: 14 obtained one each: 10 obtained two each; 5 three each: 1 obtained four: 1 obtained five: none obtained six; and 2 obtained seven each; namely, Hanley and Sheffield. The population of Sheffield was then put down at nearly 200,000, and there were nearly 1,300 pupils; so that it was not surprising that it equalled Hanley. Birmingham, with 234,000 inhabitants and 2,000 pupils, obtained only one national prize: Bristol, with 173,000 inhabitants and 2,700 pupils, did not get one national prize; Dublin, with 250,000 inhabitants, two prizes: Glasgow, 400,000, obtained three; Leeds, with 172,000, none; Liverpool, with 350,000 inhabitants, one prize; Manchester, with 375,000, three national prizes; Hanley, 35,000 inhabitants, seven national prizes, being equal in that year with Sheffield. In the four years commencing 1857 and ending with the last year, Hanley beat Sheffield by one medallion, the former obtaining 25 and the latter 24. The chairman afterwards announced that Alderman Copeland had offered four prizes to the students; a first prize of 2*l.* for the best model of a handled cup and saucer; 1*l.* for a second ditto; 2*l.* for the best model of a jug; and 1*l.* for a second ditto.

WORCESTER HORTICULTURAL SOCIETY. — The design of Mr. Cranston, architect, has been selected by the directors of the Worcester Horticultural Society, for the erection of a pavilion in the Arboretum of that city. The execution of the work is to be tendered for.

MANCHESTER ARCHITECTURAL ASSOCIATION.—A meeting was held on Wednesday evening at the rooms, George-street, the vice-president in the chair, at which Mr. R. W. Aitken read a paper on "Geology," (with more particular reference to building-stone); which was followed by an animated discussion "On Atmospheric Influence in the Disintegration of Stone."

THE PROPOSED WELLINGTON MONUMENT, AT WELLINGTON.—A deputation, consisting of Mr. J. Hayward, and Mr. Gibbs, the architect of the monument, has asked the local trustees for their assent to erect this monument in the street opposite the Town Hall, Wellington. Another deputation opposes the application, on the ground of its being an obstruction. A committee was appointed to view the site, with a block the size of the base of the proposed monument, placed on it, to see its effect, and whether it was likely to be objectionable, and to report thereon.

THE COMMITTEE ON METROPOLITAN FIRES.—The House of Commons Committee on Fires in the metropolis have had meetings. Officers from the different dock companies have given evidence of the arrangements made in the docks for the suppression of fires. The arrangements they describe as quite sufficient for the purpose. The Metropolitan Fire Brigade they consider efficient as far as it goes, but inadequate for its work. Mr. Vulliamy, the architect to the Metropolitan Board of Works, and some other witnesses from that office, have given it as their opinion that the means of suppressing fires in the metropolis ought to be in charge of that Board; and that if the members were asked they would willingly undertake the duty.

ST. STEPHEN'S, WALBROOK.—Wren's "model church," St. Stepen's, Walbrook, has just had some appropriate additions made to it, in the shape of stained-glass windows, to the memory of Dr. Croly. Their execution was intrusted to Messrs. Gibbs & Co. There are four large windows, two at either end of the church, and thirteen smaller ones. The subjects of the large windows at the west end of the church are the Nativity and Baptism of Christ; at the east end, the Crucifixion and Ascension. The small windows at the north side are illustrative of the Parables of our Lord;—the Sower, Good Samaritan, Prodigal Son, Dives and Lazarus, Pharisee and Publican, the Ten Virgins, and the Good Shepherd. On the south side, the miracles represented are—Turning Water into Wine; Raising Jairus's Daughter; Restoring the Blind to Sight; Feeding the Five Thousand; the Pool of Bethesda; and Christ Walking on the Sea. The surrounding buildings interfere with the light of two or three of the windows.

MORGAN'S HOSPITAL, DUNDEE.—At a meeting of the trustees of this hospital, a report was read from a deputation sent to Edinburgh to visit the hospital there, and to consult with Messrs. Peddie & Kinnear, architects, as to their plan for the hospital. The Dean of Guild was one of the three gentlemen forming the deputation. Their report approved of the plan referred to, and stated that several of the Edinburgh hospitals appeared to be overburdened with elaborate and expensive architectural ornaments; and that the plan proposed seemed better adapted for the purposes intended than some of the expensive Edinburgh buildings. The under story had been dispensed with; which, from what the deputation saw in the Edinburgh hospitals, would be a great improvement upon the original sketches laid before the Court of Session. In consequence of this alteration there would be more extent of roofing; but that expense would be met by the saving in excavations, under building, and retaining walls. The cost of the proposed building was estimated at 11,800*l.*, being an advance on the original estimate of 1,500*l.*, of which 1,000*l.* is on account of the improvements of the plan, and the remaining 500*l.* is on account of the advanced rates of wages and materials, with gateway, enclosing walls, &c. The whole estimated expenses amounted to 12,810*l.* The design is in the Scottish baronial style. Mr. Peddie, who was present at the meeting, said, that since he had made his calculations as to the cost of the erection, certain alterations had taken place. He found now that the cost of the whole building would be about 13,250*l.*, while the original plan cost only 11,500*l.* The report of the sub-committee was approved of, and remitted back to the property committee to get working plans and specifications, and to report.

LECTURES IN THE CRYSTAL PALACE.—The introductory lecture of the series on art, at the Crystal Palace, was delivered by Dr. Kinkel, on Thursday afternoon, 6th inst., before an attentive audience. Architecture and painting in their origin and characteristics were the main subjects treated of, and the advantages of possessing some knowledge of them were enforced. The subsequent lectures of the course will take place, we understand, in the various courts of the Crystal Palace. This arrangement we have long urged.

NATIONAL SCHOOLS, MARKET-STREET, MAYFAIR.—An extensive school-house has been erected in Market-street. Mr. Heskett was the architect; Mr. Hayward, the builder. The school has cost about 6,000*l.* It is a substantial brick building, comprising three principal school-rooms, for boys, girls, and infants, with convenient class-rooms adjoining. The schools, which are in connexion with the National Society, and subject to the visit of her Majesty's inspector, will be amply sufficient for 500 children. Convenient residences for the master and mistresses are attached. The committee of council have co-operated with the promoters in the erection of these schools, and gave 1,400*l.*

"JUST TOUCH THE CONDUCTOR."—A correspondent (W. G.), complaining of the great difficulty of communicating with the conductor or driver of an omnibus, especially late at night, when the lamp is nearly out and the "bus" is full, and many of the riders are fast asleep, says:—"Several methods have been tried, some by means of air-tubes; but all seem to have been abandoned as soon as tried. Now, as the Exhibition is near at hand, would it not be a great convenience to the public, and very little expense to the proprietors, to make a direct communication by means of the ordinary bell-wire and pull, with the hammer striking on a bell similar to the clock; one handle being placed at the end, another about midway?"

THE COMING EXHIBITION.—Among the first of the British exhibitors who have taken possession of their allotted space is the Coalbrookdale Iron Company, who, during the last fortnight, have been laying foundations beneath the floor in the eastern transept of the Great Exhibition building, for the large collection they contribute. This will partake of the nature of a trophy of metal-work, and will comprise castings varying from the heaviest to the most delicate. Among them will be several statues and groups; also a large set of entrance-gates of an elaborate character; differing however wholly in design from the well-known gates in the Exhibition of 1851, which were afterwards presented by the same company to the Crown, and placed in Kensington Gardens. In this case the ornamentation is a union of Italian and Byzantine; the Prince of Wales' feathers forming part of the details, and the pillars being of pierced open-work, with a solid core surmounted by figures of Victory. The part of Shropshire where these foundries exist will also contribute, in an adjacent part of the building, a variety of ornamental and trade examples of pottery and terra-cotta.

NEW BATHS AND WASHHOUSES AT BIRMINGHAM.—The Corporation Baths, in Northwood-street, have just been completed and opened. The buildings, the estimate for which was about 7,600*l.*, have been erected under the superintendence of Mr. W. Martin, by Mr. J. Wilson. The engineer's work has been carried out under the superintendence of Mr. B. Purnell, by Mr. Haywood, of Derby; and Mr. W. Middleton sank and bored the well, and supplied the steam-engine and pumps. The whole of the buildings are erected of red bricks, with stone dressings, and in the Gothic style. The establishment is arranged in three divisions. The women's department comprises waiting-room, plunge-bath, six first and six second-class private baths, &c. The men's first-class department comprises twelve private baths, a large swimming-bath, 62 feet by 31 feet, surrounded on three sides by forty-seven private dressing-rooms, and the usual appendages. The men's second-class department comprises thirteen private baths, large swimming-bath, 68 feet by 32 feet, surrounded by twenty-four private dressing-rooms on two sides, and seventy-two open dressing-stalls on the other two sides, with necessary conveniences. There is a house for the resident engineer, with a gateway entrance on the side leading to the boiler and engine-house, washhouse, tank building, engineer's smithy, and workshops. The well will produce about 15,000 gallons per hour. The water is pumped into a large iron tank over the washhouse, capable of holding 16,000 gallons of water.

SURVEYORSHIP OF BASFORD.—Mr. J. B. Heard has been appointed to the office of surveyor and inspector of nuisances to the Basford Board of Health. There were nine candidates ballotted for, and the votes declared were as follows:—For Mr. Heard, 10; Mr. Saunderson, 6; Mr. Alderson, 1. The value of the appointment is said to be 150*l.* per annum.

THE TIMBER RESOURCES OF CANADA.—Canada exports annually about 30,000,000 cubic feet of timber in a rough state, and about 400,000,000 feet, board measure, of sawed lumber. The revenue derived by the province during the year 1860 for timber cut in the public forests, according to the *Canadian News*, amounted to about 500,000 dollars, or 125,000*l.* currency.

ST. THOMAS'S HOSPITAL.—A correspondent, J. A. J., suggests that on the east side of the south end of Waterloo Bridge, "exactly facing Somerset House, is a vacant space capable of enlargement at small cost, with frontage to the river and to the Waterloo-road, where the hospital might be erected corresponding to the noble and commanding elevation on the opposite bank, and would be one of the greatest ornaments of the metropolis." If the object we had in view were simply to erect an ornament to the metropolis, we might urge this too. But as we want a place of cure, we do not. It is asserted that the authorities are about to decide in favour of Potts's Vinegar-yard! Such a determination would prove that the said "authorities" rather require to be sent into hospital than to conduct one. Is there no outer power that can make itself heard on the subject?

EARLY USE OF ELECTRIC TELEGRAPH.—In a paper read at the last meeting of the Manchester Literary and Philosophical Society, Mr. Dyer pointed out the following extract from Arthur Young's "Travels in France" (2nd edition), London, 1794, which proved that electricity had been employed at that early date for the purpose of transmitting intelligence:—"In the evening to Mons. Lomond, a very ingenious and inventive mechanic, who has made an improvement in the jenny for spinning cotton. Common machines are said to make too hard a thread for certain fabrics, but this forms it loose and spongy. In electricity he has made a remarkable discovery. You write two or three words on a paper: he takes it with him into a room, and turns a machine inclosed in a cylindrical case, at the top of which is an electrometer, a small fine pith ball: a wire connects with a similar cylinder and electrometer in a distant apartment; and his wife, by remarking the corresponding motions of the ball, writes down the words they indicate, from which it appears that he has formed an alphabet of motions. As the length of the wire makes no difference in the effect, a correspondence might be carried on at any distance; within and without a besieged town for instance; or for a purpose much more worthy, and a thousand times more harmless, between two lovers prohibited or prevented from any better connexion. Whatever the use may be, the invention is beautiful."

BLUE LIAS LIME AND CEMENT.—The Keynsham Blue Lias Lime and Cement Company, (limited), have been incorporated under the Joint-Stock Companies Acts, 1856, 1857; with a capital of 50,000*l.*, in 5,000 shares of 10*l.* each. Deposit 1*l.* per share. The registered offices are at 2, Winchester-buildings, Great Winchester-street, E.C. The prospectus states that "this company has been formed for the purpose of working and fully developing the valuable deposits of blue lias lime-stone, gypsum, clay and other substances, underlying freehold and leasehold properties (at Keynsham), possessed by the company, and for the manufacture and sale of lime, cements, and manure. The properties (it continues) contain an almost inexhaustible quantity of the finest quality of blue lias lime-stone; the average thickness of the measures being 45 feet. From one acre alone, 72,600 tons of lime can be produced. There is also a bed of lithographers' stone, six feet in thickness, which covers an area of about eight acres. . . . . The company possess ten lime-kilns, which are built of solid materials and in a substantial manner, and are capable of producing 800 tons of lime weekly; or upwards of 40,000 tons per annum. The demand has been steadily increasing in the locality of the works, for building and agricultural purposes; and in other parts of the kingdom, for public works. . . . . A beneficial arrangement has been entered into with Captain Henry Scott, R.E., for the manufacture of his Patent Cement, which commands a ready sale; and for that purpose ten ovens are already in the course of erection. The area of the company's freehold properties extends over 53 acres."

THE "INSTITUTE" PRIZES.—The design for the president's prize, marked "Humber," which was "commended," is by Mr. Robert Clamp, of Hull. Through change of residence, letter as to opening envelope did not reach him.

THE NEW RAILWAY TO CHIPPENHAM.—The works of the Calne and Chippenham railway are progressing. At the Chippenham end, a viaduct, on wood piles, has been thrown across the river Avon, and pile-driving has been commenced in the meadow, called Eastmead, adjoining. Active operations are also being carried on near Calne, a number of additional workmen having been recently employed at that end of the works.

DARLINGTON.—St. Cuthbert's Church is in a ruinous condition, it appears; and the *York Herald* states that, owing to a serious increase in the apparent instability of certain portions of the foundations, it has been deemed prudent to close it for divine service. Certain of the pillars, together with the west front, are dangerously out of the perpendicular; whilst cracks and flaws abound throughout. A considerable sum has been raised towards the restoration; though the committee have not decided on the course to be pursued, or to what extent their funds will justify them in going to save the edifice from ruin.

METROPOLITAN WATER-SUPPLY; SOUTH ESSEX WATERWORKS.—We have before spoken of the abundant supply of pure water from the chalk at Grays. A bill has now passed through Parliament for supplying many of the towns of South Essex, and ultimately the metropolis, with this water; and the works are about to be commenced. There is a continual flow of 5,000,000 gallons a day from the fissures in the chalk-pits. Brentwood, Romford, Barking, and some other places in that district, are to be first supplied. Mr. Prestwich, the well-known geologist, has examined the ground, and is of opinion that the spring has its source from two large receiving grounds geologically connected, so that either contributes to the supply independently of the other. The fissures are practically artesian wells, and the chalk of the pits extends from Purfleet to Little Thurrock, and occupies a superficial area of about 5 square miles.

DWELLINGS FOR THE WORKING CLASSES AT MALVERN.—The movement for the establishment of a benefit building society at Malvern is progressing satisfactorily. The first meeting, which was very largely attended, was adjourned, and reassembled, for the purpose of forming a provisional committee and adopting other necessary matters of detail. The Lyttelton school-room was rapidly crowded with attendants, comprising a large number of working men; and the meeting had shortly afterwards to adjourn to the new concert-room. The chair was taken by Sir Henry Lambert. Various speakers addressed the meeting; and the following resolution was unanimously passed:—"That a provisional committee be appointed, consisting of gentlemen and working men, for the purpose of resolving whether an independent society should be established for Malvern, or whether a branch should be formed in connexion with some successfully-working society, and to draw up a constitution and rules." The committee, fifteen in number, was afterwards named, and other arrangements made, for carrying out the object in view, namely, the provision of convenient, comfortable, healthy, and cheap dwellings for the working classes of Malvern.

VITAL STATISTICS.—In the year 1861 the births in Great Britain were 802,598, and the deaths 497,624; so that the natural increase was 304,974. This is the largest number of births that ever occurred in any year in Great Britain, but not the largest number of deaths. Upon an average 2,200 children were born every day,—91 an hour; and 1,363 persons died daily, or almost one every minute. There is in Scotland a rather higher birth-rate and a lower death-rate than in England; and yet a much lower rate of increase in the population; showing that a much larger proportion of the people emigrate either beyond seas or to other parts of the United Kingdom. The returns show, as usual, how much the inhabitant of the town has to contend against agencies hurtful to life, from which his country neighbour is comparatively free: the difference is especially striking in Scotland; where, in the town districts, 24 persons in every 1,000 died in the year, and only 16 in the country districts—two in the country to three in the town. In Glasgow and Dundee very nearly half the deaths were of children under five; and the children in those towns were literally decimated in the year; for, as nearly as can be ascertained without the detailed census returns, out of all the children under five years of age about one in every ten died.

ST. MARY WOOLNOTH, LOMBARD-STREET.—It is rumoured that this fine church, the work of Nicholas Hawksmore, is threatened with demolition, a very large sum having been offered by the Post-office for the site. We will not believe that such an atrocious proceeding can be seriously contemplated by those who alone have power to perpetrate it under the Bishop of London's new Act.

LIVERPOOL.—The foundation stone of a new free church, to be dedicated to St. James the Less, has been laid on a site given by the Earl of Derby, and situate in Gore-street North, St. Martin's district. This church, when completed, will consist of chancel and nave, 90 feet long by 30 feet wide, organ chamber 20 feet by 20 feet, and south aisle 70 feet by 20 feet, with wooden bellcot over the arch which divides the two latter. As the ground falls towards the west end, a class-room 28 feet by 20 feet is obtained under that part of the aisle. It is only proposed to erect the south aisle at present as a mission chapel: the organ chamber will therefore in the meanwhile serve as a chancel. The aisle is divided into five bays by buttresses and two-light windows on the south side, or that next Cranmer-street; and the chancel into two bays, the north aisle being left blank for future enlargement in that direction. The height of the interior to the ridge is about 40 feet, and to the top of the wall 21 feet. The building is to be erected of brickwork, with stone dressings, and all the timber work to be of Baltic fir, stained and varnished. The Decorated is the style adopted. The present portion of the building is to cost 1,500*l.*, and is to be completed on the 1st day of September next. Mr. Tomkinson is the builder, and Messrs. W. & J. Hay are the architects.

LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—The eleventh meeting of the present session was held on Wednesday evening, the 5th, at the Royal Institution. Mr. G. Goodall presided. A book on heraldry, printed in 1672, was exhibited by Mr. R. Isaacs. The paper for the evening was by Mr. E. A. Heffer, and was entitled "Hints on Design in Architecture." A vote of thanks was accorded to the author.

TENDERS.

For a new house at Streatham. Mr. R. W. Drew, M.A., architect. Quantities supplied by Mr. J. A. Bunker:—

Gammon	£2,340 0 0
Downs	2,322 0 0
Bartlett	2,085 0 0
Turner & Sons	1,859 0 0
Deacon	1,840 0 0
Trollope & Sons (accepted)	1,834 0 0

For the alterations at No. 75, Cornhill, for the Metropolitan and Provincial Bank. Mr. F. H. Fowler, architect. Quantities by Mr. Harris:—

Axford & Co.	£1,797 0 0
Rider	1,780 0 0
George & Son (accepted)	1,630 0 0

For partially rebuilding a warehouse, No. 23, Aldermanbury, for Mr. F. Broughton. Mr. F. G. Widdows, architect. Quantities supplied:—

Green & Son	£2,309 0 0
Child, Son, & Martin	2,039 0 0
Axford	1,998 0 0
Ashby & Sons	1,979 0 0
Brass	1,940 0 0
Ennor	1,931 0 0
Browne & Robinson	1,866 0 0
Ashby & Horner	1,864 0 0

For the erection of coach-house and stables, Buckhurst Hill, Essex. Mr. J. H. Rowley, architect:—

Dyer	£275 0 0
Rivett	223 0 0
Outhwaite (accepted)	219 0 0

For house on Weybridge Common, for Mr. Cobbett. Messrs. Mayhew & Knight, architects. Quantities not supplied:—

Welchman & Gale	£2,548 0 0
Bywaters	2,290 0 0
Thompson	1,884 0 0
Avess & Sons	1,798 0 0
Farley	1,729 0 0
Adamson & Sons (accepted)	1,725 0 0
Pearl	1,685 0 0

For Birkbeck Schools, Kingsland. Mr. Knightley, architect:—

Patman & Fotheringham	£4,036 0 0
Watterbury	3,960 0 0
Lark	3,867 0 0
Pritchard	3,745 0 0
Hart	3,480 0 0
Foster	3,444 0 0
Newman & Mann	3,436 0 0
Wood	3,347 0 0

For a villa at West End, Finchley Road, for Mr. J. Marrian. Mr. D. A. Cobbett, architect:—

Ashby & Horner	£3,620 0 0
Mansfield & Sons	3,591 0 0
Conder	3,520 0 0
Dove, Brothers	3,496 0 0
Hill, Keddal, & Robinson	3,414 0 0
Newman & Manr	3,390 0 0

For a Saloon and Corridor, Paternoster-row, for "The Religious Tract Society." Mr. W. P. Griffith, architect:—

Mansfield	£769	0	0
Brass	730	0	0
Lawrence (accepted)	694	0	0

For building a bank at Oundle, for the Stamford, Spalding, and Boston Banking Company. Mr. W. Eve, architect. Quantities not supplied:—

Thompson & Ruddle	£1,985	0	0
Cosford	1,580	0	0
Boddington	1,538	0	0
Sneath (accepted)	1,390	0	0
Storer & Wright	1,328	14	0

For building an oil factory, at Southall, Middlesex, for Mr. John Cassell. Mr. John Whichcord, architect. Quantities supplied by Mr. Wimble:—

Smith, jun.	£795	0	0
Baguley	790	0	0
Dove, Brothers	695	0	0
Macey	634	0	0
For Iron Roofs.			
Cottam & Co.	390	0	0
Morewood & Co.	269	15	0

For the supply of materials and the execution of day, jobbing, and measured works in respect of main sewers and incidental works, for Metropolitan Board of Works:

A Division (Western).

Abbott & Hopwood	3 years, at schedule prices			
R. Mann	,,	9 per cent. under ditto		
W. Crockett	,,	3 ditto	ditto	
	One year.	Two years.	Three years.	
Hill, Keddal, & Robinson	5	6½	8	ditto ditto
E. Thirst (accepted)	10	11	12½	ditto ditto

B Division (Eastern).

Abbott & Hopwood	..	..	..	at schedule prices
Moxon	6	7	8	per cent. under ditto
Hill, Keddal, & Robinson	10	11	12	,, ,,
Dethic (accepted)	8	10	12½	,, ,,

E Division (Southern).

Moxon	4	5	6	,, ,,
Hill, Keddal, & Robinson (accepted)	8½	10½	12½	,, ,,

For the erection of a villa residence, at Uxbridge, for Mr. E. Hedgcock. Mr. Robert W. Edis, architect:—

Simpson	£1,800	0	0
Spurgeon	1,712	10	0
Shoppee & Son	1,710	0	0
Morten	1,638	0	0
Hardiman & Sandon	1,557	0	0
Fassnidge & Son	1,515	0	0

For alterations and repairs at No. 177, Ratcliffe-highway. Mr. F. G. Widdows, architect:—

Wheen	£154	0	0
Smith	147	0	0
Williams	117	0	0
Ennor	114	0	0

For the erection of two detached villa residences, at Hornsey. Mr. J. W. Reed, architect:—

Langtree	£2,914	0	0
Anley	2,900	0	0
Hill & Son	2,690	0	0
Hawkes	2,650	0	0
Smith	2,550	0	0
Green	2,462	0	0
Duncan	2,456	0	0
Sale	2,455	0	0
Evans	2,430	0	0
Carter	2,264	0	0
Sleap (accepted)	1,950	0	0

For the erection of workshop and stores for Messrs. H. J. & E. Lewis, 40 and 41, Marsham-street, Westminster. Mr. Jacques, architect:—

Jackson & Shaw	£305	0	0
King & Son	240	0	0
Bowley, Brothers	215	0	0
Wardle & Baker	200	0	0
Pemberton & Price	198	10	0
Mellwraith (accepted)	185	0	0

For rebuilding the Angel Inn, Buntingford. Messrs. Nash & Son, architects. Quantities not supplied:—

Lawrance	£540	0	0
Ginn	505	15	0
Saggers	500	0	0
Savell	497	10	0
Gibbons	430	0	0
Grimson (accepted)	374	0	0

For a dwelling-house for Mr. Jas. Chapman, at Lottsford, near Standon, Hertfordshire. Messrs. Henry W. Sass & Chas. Chapman, architects. Quantities supplied:—

Hart	£1,360	0	0
Sawyer	1,340	0	0
Holden	1,319	0	0
Hobbs & Son	1,295	0	0
Scott	1,292	0	0
Cook	1,263	8	0
Guin & Killby	1,260	0	0
Hitch	1,255	0	0
Smith	1,246	0	0
Dickinson	1,245	0	0
Stevenson	1,192	0	0
Glasscock	1,125	0	0
Whittaker	1,125	0	0
Gibbons	1,100	0	0

For dwelling-house and coffee-rooms, in Cauldwell-street, Bedford. Mr. Usher, architect:—

Reynolds & Son	£484	0	0
Young	452	12	2
Cunvin	422	0	0
Houghton	405	15	0
Francis & Son	378	15	0
Preston	371	0	0
Joy	339	9	6

TO CORRESPONDENTS.

Col. F.—Rev. J. A. J.—J. W. D. K.—D. B. (the desideratum is to give an *upward current* to the air admitted at the meeting-rail).—F. R. W.—R. S. S.—R. J. (if of wood, it would be illegal).—J. McC. (when sent we will reply).—T. J.—Dr. M. (there is no good snow-stop on sale that we know of).—W. & B.—N. R. (should signify his willingness to pay for an inscription on the stone covering De Foe's remains to the authorities of Bunhill Field's Burial-ground).—Dr. W. P.—R. A. T. (next week).—N. R.—J. W. R.—J. W. D. (not very clear).—F. L. (in type).—R. P.—G. W.—* * (has Note arrived?)

NOTE.—*The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.*

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